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WETLANDS ASSESSMENT
Rocky Flats Site

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ASI Project No 667 Task 12

ADMIN RECORD

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1.0 INTRODUCTION

The Rocky Flats Plant (RFP), located near Golden, Colorado, historically has produced plutonium and other radioactive and nonradioactive components for nuclear weapons under the direction of the U.S. Department of Energy (DOE). The Rocky Flats site occupies over 10 square miles in Jefferson County The RFP process and administrative buildings are concentrated in a small area (356 acres) and are surrounded by a security fence A fenced buffer one encompassing 6,240 acres surrounds the high security area The entire area within the fenced buffer zone, or the Rocky Flats Boundary, which includes the process and administrative buildings, is referred to within this report as the Rocky Flats site Developments within the buffer zone include firebreaks, holding ponds for process waste, environmental monitoring stations, a sanitary-landfill area, salvage yard, wind energy test towers, gravel pits, target range, and access roads (DOE, 1980)

As a Federal agency, the DOE, in maintaining its facility at the RFP, is required to comply with environmental regulations concerning wetlands. The RFP's Final Environmental Impact Statement did not address specifically wetland issues (DOE, 1980). The purpose of this report is to identify and to map wetlands occurring on the Rocky Flats site in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.) and with the Floodplain/Wetlands Environmental Review Requirements (10 CFR Parts 1021 and 1022).

2.0 OVERVIEW OF APPLICABLE REGULATIONS

2.1 Review

Numerous regulations and acts have been promulgated for the purpose of protecting water-related resources. The relevant acts and laws which protect environmental resources, including wetlands, are the National Environmental Policy Act (NEPA) of 1969; Executive Order 11990--Protection of Wetlands, Sections 401 and 402 of the Clean Water Act; the Fish and Wildlife Act of 1956 plus associated coordination acts; and regulations promulgated under 10 CFR Part 1022--Compliance with Floodplain/Wetlands Environmental Review Requirements. These regulations are summarized in this section Additionally, a detailed discussion of the laws associated with the 404 Permit--Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR Part 230); and Permits for Discharges of Dredged and Fill Material into Waters of the United States (33 CFR Part 323)--is contained in Section 6 0

The rules promulgated under NEPA (1969) 42 U.S.C. 4321 et seq , in 40 CFR Parts 1500 through 1508 state that all Federal agencies are required to consider the environmental effects of any proposed action. Agencies also are required to prepare detailed environmental statements on proposals for legislation and other major actions involving Federal government facilities which will significantly affect the quality of the human environment.

Guidance for preparation of Action Description Memoranda (ADM), in Appendix A of the Environmental Compliance Guide, includes direction to assess possible conflicts between DOE projects and wetlands. This is to be accomplished through the NEPA process. The DOE uses Action Description Memoranda (ADM) to determine what level of NEPA compliance documentation may be required.

Executive Order (E.O.) 11990--Protection of Wetlands (May 24, 1977), requires all Federal agencies to issue or amend existing procedures to ensure consideration of wetlands protection in decision making It is the intent of the E.O. that Federal agencies address the wetlands requirements through existing procedures such as those established to implement NEPA.

Regulations promulgated under 10 CFR Part 1022--Compliance with Floodplain/Wetlands Environmental Review Requirements (March 7, 1979) require the DOE, to the extent possible, to accommodate the requirements of E.O. 11990 through applicable NEPA procedures. These policies and procedures are to include the consideration of wetland factors in DOE planning and decision making, providing the opportunity for early public review of proposed actions, preparation of wetland assessments, and the issuance of statements-of-findings for actions impacting wetlands.

Section 401 of the Clean Water Act (33 U.S.C. 1341) requires all applicants proposing to conduct an activity that may result in the discharge of a pollutant into any water body to obtain a Federal license or permit. Additionally, all applicants are to obtain a certification from the State to ensure that the discharge will comply with applicable effluent limitations and water-quality standards. Section 402 of the Clean Water Act authorized the U.S. Environmental Protection Agency (EPA) to issue discharge permits. This was implemented through procedures established in the National Pollutant Discharge Elimination System (NPDES) program. This program has been officially delegated by the EPA to the State of Colorado's Department of Health (CDH).

The Fish and Wildlife Act of 1956 (16 U.S.C. 742a, et seq.), the Migratory Marine Game-Fish Act (16 U.S.C. 760c-760g), the Fish and Wildlife Coordination Act (16 U.S.C., 661-666c), and the

Reorganization Plan No. 4, require that any Federal agency that proposes to control or modify any body of water must first consult with the U.S. Fish and Wildlife Service. Additionally, the agency should consult with the head of the appropriate State agency (Colorado's Division of Wildlife (CDOW), in this case) exercising administration over the affected state's wildlife resources.

2.2 Applicability

Projects constructed prior to October 1, 1977, which affect wetlands are considered to be "grandfathered" and are exempted from regulations specified under 10 CFR Part 1022. Further, RFP filed a draft Environmental Impact Statement (EIS) in September 1977, and projects affecting wetlands were exempt from review if a draft or final EIS for the project was filed prior to October 1, 1977. All projects or proposed projects (i.e., impoundment enhancements or any project that potentially affects a wetland) after October 1, 1977 are not grandfathered under 10 CFR 1022.5 (c). Sections 1022.5(e)(f)(g) and (h) require that impacts to wetlands be assessed for any projects conducted in furtherance of DOE activities. Construction projects affecting wetlands not discussed in the RFP EIS are subject to the requirements of 10 CFR 1022.

In addition to the requirements provided in 10 CFR 1022, the RFP is required to follow regulations outlined in 33 CFR Parts 320 through 330--Regulatory Programs of the Corps of Engineers. The 404 and Nationwide (general) Permits, issued by the U.S. Army Corps of Engineers (COE), are potentially relevant to Rocky Flats site. These permits are further discussed in Section 6.0.

3 0 CRITERIA FOR IDENTIFYING WETLANDS

3.1 Background

A number of regulations and guidelines have been published to provide regulatory direction and technical procedures in identifying wetlands. Regulatory procedures for wetlands determination are delineated in 10 CFR Part 1022 dated March 7, 1979. Section 1022.11(c) lists the sources of information and agencies that should be considered in identifying wetlands. At the Federal level, four agencies are to be consulted: (1) the Department of Army Corps of Engineers (COE); (2) the U.S. Environmental Protection Agency (EPA); (3) the U.S. Fish and Wildlife Service (FWS); and (4) the U.S. Department of Agriculture's Soil Conservation Service (SCS).

A system for classifying wetlands was published by the FWS (Cowardin et al., 1979) which describes five major wetland and deepwater habitats: (1) marine; (2) estuarine; (3) riverine; (4) lacustrine; and (5) palustrine. The riverine, lacustrine, and palustrine wetland habitats have been identified on or near the Rocky Flats site by FWS.

The riverine system is defined as including all wetlands and deepwater habitats contained within a channel. The lacustrine system includes wetlands and deepwater habitats that are: (1) situated in a topographic depression; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage; and (3) greater than 8 hectares (ha), or about 20 ac, in total area. The palustrine system includes all wetlands and ponds or other water bodies less than 8 ha (20 ac). The palustrine system includes wetlands that are: (1) dominated by trees, shrubs, persistent emergents, emergent mosses or lichens;

and (2) areas without vegetation that are less than 8 ha (20 ac), lack wave-formed or bedrock shoreline features, and the water depth is less than 2 meters (m), or about 6 feet (ft), at low water (Cowardin et al., 1979) The majority of wetlands at the Rocky Flats site are classified palustrine by the FWS

Weber et al. (1974) conducted a vegetation species inventory of the Rocky Flats site They reported that 327 vascular plant species, 25 lichens, 15 bryophytes, and one macroscopic green algae species were observed on the site. Based upon this information, plant species that are known to occur on the site were classified according to their potential wetland status using the National List of Plant Species That Occur in Wetlands Central Plains (Region 5) (Reed, 1988) These species are listed in Table 1.

Clark (1977) conducted a baseline vegetation study of the Rocky Flats site that identified, described, and mapped sixteen vegetation communities Employing the applicable community descriptions and species index values, the percentage of vegetation dominated by obligate species (OBL), upland species (UPL), facultative wetland species (FACW), facultative species (FAC), and facultative upland species (FACU), plant communities were categorized according to their wetland status Generally, the site is characterized by a variety of grassland communities at the higher elevations and ridge tops These grasslands include· needlegrasses (*Stipa spp*), wheatgrasses (*Agropyron spp*), big bluestem (*Andropogon gerardii*), and side-oats gramma (*Bouteloua curtipendula*) The ravines are characterized by common chokecherry (*Prunus virginiana*) and skunkbush sumac (*Rhus trilobata*) shrubs Willows (*Salix sp*), plains cottonwood (*Populus deltoides*), and river birch (*Betula sp*) grow along the drainages.

TABLE 1

PLANT SPECIES WHICH OCCUR AT THE ROCKY FLATS SITE
AND THEIR WETLAND STATUS (adapted from Reed, 1988)

Scientific name & author	Common name	Region 5 Status
Acer saccharinum l	Maple, Silver	FACW
Aconitum columbianum Nutt.	Monkshood, Columbia	FACW
Agoseris glauca (Pursh) d.	False-Dandelion, Pale	FACU
Agrimonia striata Michx.	Groovebur, Woodland	FACU
Agropyron repens (l) Beauv.	Quackgrass	FAC
Agropyron smithii Rydb.	Wheatgrass, Western	FACU
Agropyron trachycaulum (Link) Malte ex H.F. Lewis	Wheatgrass, Slender	FACU
Agrostis alba l	Redtop	FACW
Agrostis gigantea Roth	Bentgrass, Black	NI
Alisma plantago-aquatica l	Water-Plantain, Broad-Leaf	OBL
Ambrosia artemisiifolia l	Ragweed, Annual	FACU
Ambrosia psilostachya dc	Ragweed, Naked-Spike	FAC
Ambrosia trifida l	Ragweed, Great	FACW
Amelanchier alnifolia (Nutt.) Nutt.	Service-Berry, Sasktoon	FACU
Amorpha fruticosa l	Indigo-Bush, False	OBL
Andropogon gerardii Vitman	Bluestem, Big	FAC
Androsace occidentalis Pursh	Rock-Jasmine, Western	FACU
Arabis hirsuta (l) Scop.	Rockcress, Hairy	FACU
Artemisia ludoviciana Nutt.	Sagebrush, White	FACU
Asclepias speciosa Torr.	Milkweed, Showy	FAC
Asparagus officinalis l	Asparagus-Fern, Garden	FACU
Barbarea orthoceras Ledeb.	Winter-Cress, American	OBL
Bromus japonicus Thunb.	Brome, Japanese	FACU
Calystegia sepium (l) R. Br.	Bindweed, Hedge	FAC
Campanula rotundifolia l	Bellflower, Scotch	FAC
Carex aurea Nutt.	Sedge, Golden-Fruit	FACW
Carex brevior (Dewey) Mackenz. ex Lunell	Sedge, Short-Beak	FAC
Carex douglasii boott	Sedge, Douglas'	FAC
Carex emoryi Dewey	Sedge, Emory's	OBL
Carex hystericina Muhl. ex Willd.	Sedge, Porcupine	OBL
Carex interior l.h Bailey	Sedge, Inland	OBL
Carex lanuginosa Michx.	Sedge, Wooly	OBL
Carex nebrascensis Dewey	Sedge, Nebraska	OBL
Carex praegracilis w. Boott	Sedge, Silver	FACW
Carex scoparia Schkuhr ex Willd	Sedge, Pointed Broom	FACW
Cerastium arvense l	Chickweed, Mouse-Ear	FACU
Cerastium nutans raf.	Chickweed, Nodding	FACU
Chenopodium album l	Goosefoot, White	FAC
Chenopodium botrys l	Jerusalem-Oak	FACU

TABLE 1 (Continued)

PLANT SPECIES WHICH OCCUR AT THE ROCKY FLATS SITE
AND THEIR WETLAND STATUS (adapted from Reed, 1988)

SCIENTIFIC NAME & AUTHOR	COMMON NAME	Region 5 Status
Chenopodium leptophylum (Moq.) Nutt. Ex s. Wats.	Goosefoot, Narrow-Leaf	NI
Cirsium arvense (l) Scop.	Thistle, Creeping	FACU
Cirsium undulatum (Nutt.) Spreng.	Thistle, Wavy-Leaf	FACU
Clematis ligusticifolia Nutt.	Virgin's-Bower, Western	FACU
Collomia linearis Nutt.	Collumia, Narrow-Leaf	FACU
Crataegus berberifolia Torr. & Gray	Hawthorn, Barberry-Leaf	FACU
Crepis runcinata (James) torr. & Gray	Hawksbeard, Dandelion	FAC
Dactylis glomerata l	Grass, Orchard	FACU
Dodecatheon pulchellum (ref.) Merrill	Shotting-Star, Few-Flower	FAC
Eleocharis macrostachya	Spikerush, Creeing	OBL
Eleocharis tenuis (Willd.) J.A. Schultes	Spikerush, Slender	FACW
Elymus canadensis l	Wild-Rye, Nodding	FACU
Epilogium leptophyllum Raf.	Willow-Herb, Linear Leaf	FACW
Equisetum laevigatum a. Braun	Scouring-Rush, Smooth	FACW
Erigeron flagellaris Gray	Fleabane, Trailing	FAC
Erigeron strigosus Muhl. ex Willd.	Fleabane, Prairie	FAC
Euphorbia marginata Pursh	Snow-On-The-Mountain	FACU
Festuca pratensis Huds.	Fescue, Meadow	FAC
Gallium aparine l	Bedstraw, Catchweed	FACU
Gallium boreale l	Bedstraw, Northern	FAC
Geum macrophyllum Willd.	Avems, Large-Leaf	OBL
Glyceria maxima (Hartm.) O.R. Holmberg	Meadowgrass, Reed	OBL
Glyceria striata (Lam.) A. Hitchc.	Grass, Fowl Manna	OBL
Glycyrrhiza lepidota Pursh	Licorice, American	FACU
Grindelia squarrosa (Pursh) Dunal	Gumweed, Curly-Cup	FACU
Helianthus annuus l	Sunflower, Common	FACU
Heracleum lanatum Michx.	Cow-Parsnip	FACW
Hordeum jubatum l	Barley, Fox-Tail	FACW
Iris missouriensis Nutt.	Iris, Rocky Mountain	OBL
Juncus balticus Willd.	Rush, Baltic	OBL
Juncus bufonius l	Rush, Toad	OBL
Juncus nodosus l	Rush, Knotted	OBL
Juncus tenuis Willd	Rush, Slender	FAC
Juncus torreyi Coville	Rush, Torrey's	FACW
Lactuca serriola l	Lettuce, Prickly	FAC

TABLE 1 (Continued)

PLANT SPECIES WHICH OCCUR AT THE ROCKY FLATS SITE
AND THEIR WETLAND STATUS (adapted from Reed, 1988)

SCIENTIFIC NAME & AUTHOR	COMMON NAME	Region 5 Status
Lemna minor	Duckweed, Lesser	OBL
Lepidium densiflorum Schrad.	Pepper-Grass, Dense-Flower	FAC
Lysimachia ciliata	Loosestrife, Fringed	FACW
Lythrum alatum Pursh	Loosestrife, Winged	OBL
Medicago lupulina	Medic, Black	FAC
Melilotus alba Medic	Sweetclover, White	FACU
Melilotus officinalis Lam.	Sweetclover, Yellow	FACU
Mentha arvensis	Mint, Field	FACW
Mimulus floribundus Lindl.	Monkey-Flower, Floriferous	OBL
Mimulus glabratus H.B.K.	Monkey-Flower, Round-Leaf	OBL
Monarda fistulosa	Bergamot, Wild	FACU
Myosurus minimus	Mouse-Tail, Tiny	FACW
Nasturtium officinale R. br. in W.T. Ait.	Water-Cress, True	OBL
Nepeta cataria	Catnip	FACU
Oenothera flava (A. Nels.) Garrett	Evening-Primrose, Yellow	FACW
Oxytropis lambertii Pursh	Crazy Weed, Lambert's	FACU
Panicum capillare	Witchgrass	FAC
Panicum virgatum	Switchgrass	FAC
Phleum pratense	Timothy	FACU
Phyla cuneifolia (Torr.)	Frog-Fruit, Wedge-Leaf	FAC
Physocarpus monofynus (Torr.) Coult.	Ninebark, Mountain	FAC
Plantago lanceolata	Plantain, English	FAC
Poa compressa	Bluegrass, Canada	FACU
Poa palustris	Bluegrass, Fowl	FAC
Polygonum douglasii Greene	Knotweed, Douglas'	FACU
Populus deltoides W. Bartram ex Marshall	Cotton-Wood, Eastern	FAC
Potamogeton natans	Pondwee, Floating-Leaf	OBL
Prunella vulgans	Heal-All	FAC
Prunus virginiana	Cherry, Choke	FACU
Ranunculus aquatilis	Butter-Cup, White Water	OBL
Ranunculus macounii Britton	Butter Cup, Mancoun's	OBL
Rhus trilobata Nutt.	Sumac, Smooth	NI
Rorippa palustris (L.) Besser	Yellow-Cress, Bog	OBL
Rosa arkansana T. Porter	Rose, Prairie	NI
Rudbeckia hirta	Susan, Black-Eyed	FACU
Rudbeckia laciniata	Coneflower, Cut-Leaf	FAC
Rumex acetosella	Sorrel, Sheep	FAC
Rumex crispus	Dock, Curley	FACW
Sagittaria latifolia Willd.	Arrow-Head, Broad-Leaf	OBL

TABLE 1 (Concluded)

PLANT SPECIES WHICH OCCUR AT THE ROCKY FLATS SITE
AND THEIR WETLAND STATUS (adapted from Reed, 1988)

SCIENTIFIC NAME & AUTHOR	COMMON NAME	Region 5 Status
Salix amygdaloides Anderss.	Willow, Peach-Leaf	FACW
Salix exigua Nutt.	Willow, Sandbar	OBL
Schizachyrium scoparium (Michx.) Nash	Bluestem, Little	FACU
Scirpus acutus Muhl. ex Bigel.	Bulrush, Hard-Stem	OBL
Scirpus americanus Pers.	Bulrush, Olney's	OBL
Scirpus microcarpus J. & K. Presl	Bulrush, Small-Fruit	OBL
Scirpus pallidus (Britton) Fernald	Bulrush, Cloaked	OBL
Scirpus validus Vahl	Bulrush, Soft-Stem	OBL
Scrophulana lanceolata Pursh	Figwort, Lance-Leaf	FAC
Senecio integerrimus Nutt.	Groundsel, Lambstongue	FACW
Senecio plattensis Nutt.	Groundsel, Prairie	FACU
Sisymbnum altissimum /	Mustard, Tall Tumble	FACU
Sisyrinchium montanum Greene	Blue-Eye-Grass, Strict	FAC
Sitanion hystrix (Nutt.) J.G. Smith	Squirrel-Tail, Bottlebrush	FACU
Smilacina stellata (L.) Desf.	False-Solomon's-Seal, Starry	FAC
Spartina pectinata Link	Cordgrass, Prairie	FACW
Sporobolus cryptandrus (Torr.) Gray	Dropseed, Sand	FACU
Sporobolus heterolepis (Gray) Gray	Dropseed, Prairie	FACU
Stellaria longifolia Muhl. ex Willd.	Starwort, Long-Leaf	OBL
Taraxacum officinale	Dandelion, Common	FACU
Thlaspi arvense L.	Penny-Cress, Field	NI
Toxicodendron rydbergii (Small ex Rydb.) Greene	Ivy, Rydberg Poison	FAC
Trifolium hybridum /	Clover, Alsike	FACU
Trifolium pratense /	Clover, Red	FACU
Typha angustifolia /	Cattail, Narrowleaf	OBL
Typha latifolia /	Cattail, Broad-Leaf	OBL
Verbena bracteata Lag. & Rig.	Vervain, Prostrate	FACU
Verbena hastata /	Vervain, Blue	FACW
Veronica americana Schweinitz ex Benth.	Speedwell, American	OBL
Veronica angallis-aquatica /	Speedwell, Water	OBL
Veronica peregrina /	Speedwell, Purslane	OBL
Vicia americana Muhl. ex Willd	Vetch, American Purple	NI
Viola papilionacea Pursh	Violet, Common Blue	FAC
Vitis riparia Michx.	Grape, River-Bank	FAC
Xanthium strumarium /	Cockle-Bur, Rough	FAC
Zigadenus veneosus s. Wats.	Deathcamas, Meadow	FAC

Based upon the hydrophytic vegetation criteria identified above, the following vegetation types identified at the Rocky Flats site by Clark (1977) meet the hydrophytic vegetation criteria for jurisdictional wetlands:

1. *Salix exigua -- Barbarea orthoceras*: This wet, streambank vegetation type meets the requirements for hydric dominated vegetation under Criterion 1 (Section 3.2), because OBL species comprise all dominants in the plant community The two dominant plant species were *Salix exigua* which had a species index of 70.16 and *Barbarea orthoceras* which had a species index of 29.41. Additionally, of the 21 species identified (Clark, 1977), 5 species are OBL (23.8%), 2 are FACW species (9.5%), 5 are FAC species (23.8%), 4 are FACU species (19%), and 5 are (UPL) species (23.8%). Thus, 76 percent of the total species identified are either OBL, FAC, or FACU species.

2. *Carex nebrascensis -- Juncus arcticus*: This wet, marsh vegetation type meets the requirements for hydric-dominated vegetation under Criterion 1 (Section 3.2), because OBL species comprise all major dominants within the plant community. *Carex nebrascensis* and *Juncus arcticus* had species indices of 73.23 and 21.20, respectively. Of the 20 plant species identified, [redacted] were OBL (30%), 1 was FACW (5%), 4 were FACW (20%), 3 were FAC (15%), 2 were FACU (10%), 1 was an NI (not included in list) (5%), and 3 were UPL species (15%). Thus, 11 of the 20 species were categorized as either OBL or FACW plant species (55 percent). Additionally, 14 (70 percent) of the total species are OBL, FACW, or FAC species. These two wetlands are common in drainages at the Rocky Flats site.

3.2 Criteria For Identifying Jurisdictional Wetlands

Technical procedures for identifying wetlands were cooperatively published in the "Federal Manual for Identifying and Delineating Jurisdictional Wetlands" (FICWD, 1989). The purpose of this manual is to provide mandatory technical criteria, field indicators, and recommended methods to determine whether or not a wetland is jurisdictional, and to delineate the boundary of such wetlands. Jurisdictional wetlands are defined as wetlands which meet three major criteria. (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology (FICWD, 1989). These wetland criteria are described in the following subsections.

3.2.1 Hydrophytic Vegetation Criteria

Wetland, or hydrophytic, vegetation is classified by its likelihood to occur in a wetland. Obligate wetland species (OBL) almost always occur in wetlands (probability >99%); facultative wetland species (FACW) usually occur in wetlands (probability 67-99%); facultative species (FAC) are equally likely to occur in wetlands or non-wetlands (probability 34-66%); facultative upland species (FACU) usually occur in non-wetlands (probability 67-99%), but occasionally occur in wetlands; and UPL species almost always occur in non-wetlands (probability >99%). Table 1 lists the plant species that occur at the Rocky Flats site and their associated wetland status.

The following five vegetation criteria were used to identify wetlands at the Rocky Flats site:

(1) OBL species comprise all dominants in the plant community; or

(2) More than 50 percent of the composition of the dominant species from all vegetation strata are OBL, FACW, and/or FAC species; or

(3) A frequency analysis of all species within the community yields a prevalence index value of less than 3.0 (where OBL = 1.0, FACW = 2.0, FAC = 3.0, FACU = 4.0, and UPL = 5.0); or

(4) A plant community has a visually estimated percent coverage of OBL and FACW species that exceed the coverage of FACU and UPL species; or

(5) A plant community has less than or equal to 50 percent of the dominant species from all strata represented by OBL, FACW, and/or FAC species, or a frequency analysis for all species within the community yields a prevalence index value greater than or equal to 3.0, and hydric soils and wetland hydrology are present.

3.2.2 Hydric Soils Criteria

The SCS defines hydric soils as soils that are saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions in the upper parts of the pedon (FICWD, 1989). Generally, hydric soils are flooded, ponded or saturated for one week or more during the period when soil temperatures are above biological zero (41° F), and they usually support hydrophytic vegetation. The National Technical Committee for Hydric Soils (FICWD, 1989) criteria for hydric soils are as follows:

(1) All Histosols except Folists; or

(2) Soils in Aquic suborders, Aquic subgroups, Albolls suborder, Salorthids great group, or Pell great groups

of Vertisols that are (a) somewhat poorly drained and have a water table less than 0.5 feet from the soil surface for a significant period (usually a week or more) during the growing season, or (b) poorly drained or very poorly drained and have either a water table less than 1.0 foot from the soil surface for a significant period (usually a week or more) during the growing season if permeability is equal to or greater than 6.0 inches/hour in all layers within 20 inches, or a water table at less than 1.5 feet from the soil surface for a significant period during the growing season if permeability is less than 6.0 inches/hour in any layer within 20 inches; or

(3) Soils that are ponded for a long duration or very long duration during the growing season; or

(4) Soils that are frequently flooded for long duration or very long duration during the growing season.

3.2.3 Wetland Hydrology Criteria

An area has wetland hydrology when saturated to the soil surface or inundated at some point in time during an average rainfall year. The "Federal Manual for Identifying and Delineating Jurisdictional Wetlands" (FICWD, 1989) identifies the following criteria for wetland hydrology:

(1) Saturation to the soil surface normally occurs when soils in the following natural drainage classes meet the following conditions:

(a) In somewhat poorly drained mineral soils, the water table is less than 0.5 feet from the soil surface for usually one week or more during the growing season; or

(b) In low permeability (<6.0 inches/hour), poorly drained or very poorly drained mineral soils, the water table is less than 1.5 feet from the soil surface for usually one week or more during the growing season, or

(c) In more permeable (>6 0 inches/hour), poorly drained or very poorly drained mineral soils, the water table is less than 1.0 foot from the soil surface for usually one week or more during the growing season; or

(d) In poorly drained or very poorly drained organic soils, the water table is usually at a depth where saturation to the soil surface occurs more than rarely.

(2) An area is inundated at some time if ponded or frequently flooded with surface water for one week or more during the growing season.

4.0 METHODS FOR WETLANDS DETERMINATION AT THE ROCKY FLATS SITE

Methods for identifying wetlands at the Rocky Flats site followed those presented in the "Federal Manual for Identifying and Delineating Jurisdictional Wetlands" using the "Offsite Determination Method" (FICWD, 1989). Field visits were conducted to verify delineated wetlands. The six general steps in the Offsite Determination Method are as follows. (1) locate the area of interest on a U.S. Geological Survey (USGS) topographic map and delineate the approximate subject area boundary on the map, (2) review appropriate National Wetlands Inventory (NWI) maps, State wetland maps, or local wetland maps where available; (3) review SCS soil survey maps where available; (4) review recent aerial photos of the project area; (5) review available site-specific information; and (6) determine whether wetlands exist in the subject area. Wetlands can be assumed to exist if any of the following conditions exist: (1) wetlands are shown on NWI or other wetland maps, and hydric soil or a soil with hydric soil inclusions is shown on the soil survey; or (2) hydric soil or soil with hydric soil inclusions is shown on the soil survey, and (a) site-specific information confirms hydrophytic vegetation, hydric soils, and/or wetland hydrology, or (b) signs of wetland are detected by reviewing aerial photos; or (3) any combination of the above or parts thereof (e.g., vegetated wetland on NWI maps and signs of wetland on aerial photos) (FICWD, 1989). Wetland determination and delineation at the Rocky Flats site included interpretation of color-infrared aerial photographs of the area, and review of appropriate NWI maps, SCS soil survey, and pertinent vegetation, soils, and hydrology reports.

Preparation of the Rocky Flats wetlands map (Plate 1) used the following procedures: color-infrared aerial photographs were acquired in 1989 and were enlarged to a scale of approximately 1:6,000. Field visits were made to verify photo signatures (color and texture) of wetlands Wetland boundaries were drawn on mylar

overlays placed on the aerial photographs and these wetlands then were traced on a base map of the same scale as the photographs.

5 0 RESULTS

5.1 Description of Wetlands

A variety of wetlands occur at the Rocky Flats site including an open lake, ponds, intermittent streams, and hillside seeps. All wetlands identified by the off-site method are delineated on the Wetlands Map (Plate 1). These wetlands were field checked by COE personnel to determine their jurisdictional status. When these wetlands were also identified by FWS, during the National Wetlands Inventory, the FWS classification label was added to the Rocky Flats Site Wetlands Map. Although both the riverine and lacustrine types exist on the site to a very limited extent, the palustrine type is common. Based upon the FWS wetlands classification system (Cowardin et al., 1979), the following wetland types were identified by the FWS (Plate 1):

- Riverine: intermittent, streambed, intermittently flooded/temporary (R4SBW).
- Lacustrine: limnetic, open water, artificial, intermittently exposed/permanent (L1OWKZ).
- Palustrine:
  (a) open water, semipermanent (POWF);
  (b) open water, artificial, semipermanent (POWKF);
  (c) flat, intermittently flooded/temporary (PFLW);
  (d) flat, saturated/semipermanent/seasonal (PFLY);
  (e) emergent, seasonal (PEMC);
  (f) emergent, intermittently flooded/temporary (PEMW).

Segments of the two main drainages on the Rocky Flats site, Walnut Creek and Woman Creek, as well as other secondary drainages, support hydrophytic vegetation species, including sandbar willow (*Salix exigua*), American watercress (*Barbarea orthoceras*), and plains cottonwood. Sandbar willow and American watercress are obligate wetland species and plains cottonwood is a facultative species. Other species that occur in drainages on the Rocky Flats site include broad-leaf cattail (*Typha latifolia*), baltic rush (*Juncus balticus*), silver sedge (*Carex praegracilis*), peachleaf willow (*Salix amygdaloides*), cordgrass (*Spartina pectinata*), narrow-leaf cottonwood (*Populus angustifolia*) and various bulrushes (*Scirpus sp*).

Numerous seeps are scattered on the hillsides of the Rocky Flats site which are dominated by broad-leaf cattail. Cattails and other obligate wetland species also are found on the periphery of many of the ponds on site, as well as in collection and diversion ditches.

5.2 Wetland Soils

The SCS has identified two hydrologic soil groups which occur on the Rocky Flats site (SCS, 1980):

Group B. Soils having a moderate infiltration rate when completely wet. These consist chiefly of moderately deep or deep, moderately well-drained or well-drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

On the Rocky Flats site, three soil mapping units have been identified where wetlands have been observed: (1) Haverson loam, 0-3% slopes; (2) McClave clay loam, 0-3% slopes; and (3) Denver-Kutch clay loam, 5-9% slopes (SCS, 1980).

The Haverson loam, 0-3% slopes, soils are found along Woman Creek, Walnut Creek, and Rock Creek. These are deep, well-drained soils on flood plains and low terraces. These soils are fine-loamy, mixed (calcareous), mesic Ustic Torrifluvents which formed in stratified loamy alluvium of mixed origin. This soil mapping unit is within Group B of the hydrologic soil groupings. The SCS noted that flooding occurrences on this soil are rare, i.e., that flooding is unlikely, but possible under unusual weather conditions. It should be noted, however, that the SCS defines flooding as the temporary inundation of an area which is caused by overflowing of streams or by runoff from adjacent slopes. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in wetland areas. The depth to the high water table is >6.0 feet. The Haverson loam is not a histosol and does not meet criterion one as a hydric soil (see Section 3.2.2). The Haverson loam also does not meet the third criterion for hydric soils, in that they are not ponded for a long duration or very long duration during the growing season. Finally, the Haverson loam was not found to be frequently flooded for long duration or very long duration during the growing season.

The McClave clay loam, 0-3% slopes, soils are found at the toe of Walnut Creek within the delta just west of the Great Western Reservoir. The McClave series are fine-loamy, mixed, mesic Cumulic Haplaquolls soils. This is a deep, somewhat poorly drained soil on alluvial valley floors, concave plains, and low terraces. It formed in stratified, loamy alluvium derived from mixed sources. This soil is within the hydrologic soil Group C. Flooding occurs occasionally, i.e., flooding occurs on the average no more than once in 2 years. The flooding duration is brief during the months

of March through September with the depth to the high water table at 1 to 2 feet The McClave clay loam also does not meet the third criterion for hydric soils in that they are not ponded for long duration or very long duration during the growing season. Finally, the McClave clay loam was not found to be frequently flooded for long duration or very long duration during the growing season

The Denver-Kutch clay loams, 5 - 9% slopes, are soils that are on hill slopes and shoulders. The Denver series soils are fine, montmorillonitic, mesic Torretic Argiustolls The Kutch series soils are also fine, montmorillonitic, mesic Torrertic Argiustolls Although this soil mapping unit is not typically a wet, or saturated soil, the SCS mapped this soil as a wet spot which is dominated by broad-leaf cattails. This soil is within the hydrologic soil Group C. Flooding frequency is none, i.e , flooding is unlikely, but possible under unusual weather conditions. The depth to high water table is >6 feet. This soil mapping unit meets the third SCS hydric soil criterion (see Section 3.2.2) as a soil that is ponded for a long duration or very long duration during the growing season. The Denver-Kutch lay loams are not histosols and do not meet criterion one as hydric soils. The Denver-Kutch clay loams, 5 to 9% slopes soil meets the third criterion for hydric soils in that they are ponded for a long duration or very long duration during the growing season Finally, the Denver-Kutch clay loams were not found to be frequently flooded for long duration or very long duration during the growing season.

Applying the hydric soils criteria, the following is a summary of conclusions that can be made regarding the soils at the Rocky Flats site·

- None of the soil mapping units is a Histosol; therefore, the soils do not meet criterion one as hydric soils

- The Haverson loam and the McClave clay loam soils do not meet the third criterion for hydric soils.

- The Denver-Kutch clay loams, 5 to 9% slopes soil meets the third jurisdictional criterion for hydric soils in that they are ponded for a long duration or very long duration during the growing season.

- None of the soils found on the Rocky Flats Plant site is frequently flooded for long duration or very long duration during the growing season.

5.3 Location of Wetlands

Locations of wetlands are identified (Plate 1) and are shaded in to represent ponded areas or represented as solid lines in the case of linear features such as drainages and ditches. These identified wetlands are jurisdictional. The jurisdictional status and locations of the jurisdictional wetlands have been determined as a result of a field survey conducted by Mr. Terry McKee of the COE and he reviewed the resultant wetlands map (Plate 1) (Appendix A). In summary, there are approximately 107 acres of aerial wetlands (bounded by polygons by the AutoCad System) and 84,970 feet of linear wetlands within the Rocky Flats site. In addition, there are approximately 156 acres of aerial wetlands and 14,190 feet of linear wetlands outside of the Rocky Flats site which are generally to the east of the site (Plate 1). Of the 156 acres of aerial wetlands outside of the Rocky Flats Site, 140 acres can be attributed to Great Western Reservoir (Plate 1).

Within the Rocky Flats site, six ephemeral streams traverse the property. Of these, Walnut Creek, South Walnut Creek, and Woman Creek are relatively important because they drain the site. The other three streams in the general area of the RFP are Coal Creek, Rock Creek, and Leyden Gulch. The headwaters of Walnut Creek and

South Walnut Creek occur within the Rocky Flats site and generally flow eastward. South Walnut Creek is tributary to Walnut Creek which flows into the Great Western Reservoir. The headwaters of Woman Creek occur in the area, draining the south side of the Rocky Flats site, and flowing eastward into Standley Lake. Coal Creek and Rock Creek flow northward outside of the RFP area. Leyden Gulch is tributary to Leyden Lake Coal Creek and Rock Creek drain the northern part and Leyden Gulch drains the southern part of the area.

In addition to the to the above-named streams, six ditches convey water through the Rocky Flats site. The South Boulder Diversion Canal carries water southward from South Boulder Creek (north of the area) to Ralston Reservoir The Last Chance, Church, McKay, and Kinnear Ditch and Reservoir Co Ditches divert water from Coal Creek. The Last Chance Ditch delivers water to Rocky Flats Lake and Twin Lakes. Outflow from Rocky Flats Lake is transported out of the area by Smart Ditch. The Church Ditch supplies water to Upper Church Lake and Great Western Reservoir; McKay Ditch supplies water to Great Western Reservoir; and Kinnear Ditch and Reservoir Co. Ditch supply water to Standley Lake.

Due to evidence associated with other technical criteria described previously and outlined in FICWD (1989), an option of the offsite determination method was used to delinate certain wetlands at the RFP site without direct consideration of the wetland hydrology criteria (Section 3.2.3).

6.0 REGULATORY COMPLIANCE

6.1 404 Permits

Regulations were promulgated in 40 CFR Part 230 through 233 which provide "Guidelines for Specification of Disposal Sites for Dredged or Fill Material". Although published as "guidelines", they are in fact regulations and are enforced as such. The purpose of these regulations is to restore and maintain the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material. Fundamental to these regulations are two precepts: (1) dredged or fill material shall not be discharged into waters if the discharge will have an unacceptable adverse impact; and (2) degradation or destruction of wetlands is considered to be among the most severe environmental impacts. It is further stated that such degradation or destruction of wetlands may represent an irreversible loss of valuable aquatic resources.

The COE finalized its dredge-and-fill regulations on November 13, 1986 in 33 CFR Parts 320 through 330. Section 404 of the Clean Water Act (33 U.S.C. 1344) authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue Permits for Discharges of Dredged or Fill Material into Waters of the United States (commonly known as 404 Permits) (33 CFR Part 323). Any activity that will impact a wetland area, or that will cumulatively impact an area, and that will result in the discharge of dredged or fill material into waters of the United States (including wetlands) requires that a 404 permit be obtained.

The COE is authorized to issue two types of 404 permits. The first type is a general or "Nationwide Permit" for any projects that will affect an isolated wetland (CFR 33 Part 325.2 (e) Part 330) less than 10 acres in size and is authorized under any of the 26 activities allowed under this permit type. The second type is an

Individual Permit (Permits for Discharges of Dredged or Fill Material into Waters of the United States; (33 CFR Part 323) which will affect 10 acres or more.

The Permit for Discharge of Dredged or Fill Material (404 Permit) is applicable to all activities requiring placement of fill material or dredged material in waters of the United States which includes adjacent wetlands Certain discharges may be subject to nationwide general permit, regional general permit or exempt from regulation by the COE. The applicant is to consult with the COE for a determination prior to filing an application.

The decision to issue a permit will be based on an evaluation of the probable impact of the proposed activity, and its intended use, on the public interest. For activities involving 404 discharges, a permit will be denied if the discharge does not comply with the EPA's section 404(b)(1) guidelines (40 CFR 230). Any permit issued by the COE will be subject to certain terms and conditions as set forth by the COE.

The COE takes certain considerations into account before any permits are issued. These considerations include the allowance of full public-interest review for projects of significant size or impact, consideration of wetlands, consultation with relevant Federal and State regulatory agencies when necessary, water-quality considerations, and consideration of any other relevant Federal, state, or local requirements.

Additionally, it is stated that while a modification to a particular wetland may be minor in nature, the cumulative effect of numerous changes can result in a major impairment of the wetland resources. Thus, the wetland site for which an application is made will be evaluated in relation to the complete and interrelated wetland area. Furthermore, while reviewing the permit application, the COE will consult with the EPA, the FWS, the SCS, and the

appropriate State of Colorado agency to assess the cumulative effects of activities in wetlands.

It should be further noted that Part 320 4 (b)(4) states that no permit will be granted involving the alteration of wetlands identified as important (paragraph (b)(2)), unless the benefits of the proposed project outweigh the damage to the wetlands resource. In all cases, the environmental benefits and consideration of mitigation of environmental and human resources should be taken into account.

6.2 Nationwide (General) Permits

Nationwide or general Permits are defined in 33 CFR Part 322.2 (f). The term general permit is a COE authorization that is issued on a nationwide or regional basis for a category or categories of activities when 1) those activities are substantially similar in nature and cause only minimal individual and cumulative environmental impacts; or 2) the general permit would result in avoiding unnecessary duplication of the regulatory control exercised by another Federal, state, or local agency provided it has been determined that the environmental consequences of the action are individually and cumulatively minimal.

Nationwide Permits are described under 33 CFR Part 330 and may be used for any project that will affect isolated wetlands. Nationwide Permits are designed to allow certain activities to occur with little, if any, delay or paperwork. Projects regulated under Nationwide Permits impact wetlands that are less than 10 acres in size.

6.2.1 Allowed Activities

Under the Nationwide Permit, 26 activities are authorized; all such authorized activities are listed in 33 CFR Part 330 5 (a)

Activities that may be considered at the Rocky Flats Plant and which may be authorized under a Nationwide Permit include: (2) construction of structures in artificial canals; (3) the repair, rehabilitation, or replacement of a previously established structure, (7) construction of outfall structures and associated intake structures where the structure has been permitted under the National Pollutant Discharge Elimination System (NPDES) program, (12) discharge of material for backfill or bedding for utility lines, including outfall and intake structures; (13) bank stabilization activities as provided in 33 CFR Part 330 5 (13)(i) through (vii); (14) minor road crossing fills; (16) return water from an upland contained dredged material disposal area; (18) discharges of dredged or fill material into all waters of the U.S., other than wetlands, that do not exceed ten cubic yards as part of a single complete project, provided that the material is not placed for the purpose of stream diversion; (20) structures, work, and discharges for the containment and cleanup of oil and hazardous substances.

The final activity (No. 26) allowed under a Nationwide Permit describes the acreage limitations allowed under this permit. For projects which cause the loss or substantial modification of from 1 to 10 acres, the COE requires written notification of the proposed project. The COE will submit this information to and consult with the FWS, the Colorado Division of Wildlife, the Colorado Department of Health's Water Quality Control Division, and the EPA. Pending results of these consultations, the Corps will issue a Nationwide Permit authorizing the proposed activities, or they can request additional information or require further review. The COE must respond to the applicant within 20 days.

For discharges of dredged or fill material involving 10 acres or more, an Individual 404 Permit must be obtained. Individual Permits are discussed below (see Section 6.3).

6.2 2 Procedures for Obtaining Nationwide Permits

Generally, the procedure for obtaining a Nationwide Permit entails submitting a written notification to the COE of the proposed project including (1) name, address, and phone number of the permittee, (2) location of the planned work; (3) brief description of the proposed work, its purpose, and the approximate size of the waters, including wetlands which would be lost or substantially modified; and (4) any specific information required by the nationwide permit, or any other information deemed important by the permittee. Usually, the COE will conduct a site visit to confirm specific site conditions. The COE district engineer and the division engineer will review the notification and make a determination regarding the suitability of the activity under the Nationwide Permit. The COE then will notify the permittee in writing whether the project has been approved, or additional information is required, or consultation with other agencies will be necessary.

6.3 Individual Permits

Individual Permit is defined under 33 CFR Part 322.2 (e). The term "Individual Permit" means a COE authorization that is issued following a case-by-case evaluation of a specific structure or work in accordance with the procedures of this regulation and 33 CFR Part 325, and determination that the proposed structure or work is in the public interest pursuant to 33 CFR Part 320.

The COE is authorized to issue Individual Permits for projects that impact wetlands of 10 acres or more (33 CFR Parts 320 and 325). Generally, this permit requires substantially more information to be submitted to the COE than does a Nationwide Permit. Additionally, the permit application requires agency review and comment.

Methods and procedures for Individual Permit applications are delineated under 33 CFR Part 325. First, it is recommended that a pre-application consultation for major applications be held between the permittee and the COE. Following this, the applicant must file a standard application (ENG Form 4345, OMB Approval No. OMB 49-R0420) with the COE.

Information that is to be contained in the permit application includes the following (33 CFR Part 325.1 (a)):

(1) A complete description of the proposed activity including necessary drawings or plans sufficient for public notice; location, purpose and need for the proposed activity; scheduling of the activity; the names and addresses of adjoining property owners; the location and dimensions of adjacent structures; and a list of authorizations required by other federal, state, or local agencies for the work, as well as any approvals already obtained.

(2) All related project activities are included in the same permit application.

(3) If the activity would include the discharge of dredged or fill material into waters, a description of the type, composition, and quantity of the material, method of transportation and disposal, and location of disposal site.

(4) If the activity would involve the construction of an impoundment structure, the applicant may be required to demonstrate that the structure complies with state dam safety criteria, or show the structure has been designed by qualified persons.

(5) The application is to be signed by the person who desires to undertake the activity or by a duly authorized agent.

(6) An application is deemed complete when sufficient information is received to issue a public notice and the appropriate fee is paid.

The Individual Permit then will be reviewed by the appropriate regulatory agencies, undergo public review, and a permit denied or issued with or without conditions. As such, the time required to obtain a 404 Permit may vary considerably depending upon the complexity of the project, the environmental considerations, and degree of public concern.

6.4 Processing of Applications

Processing of applications is described under 33 CFR Part 325.2. When an application for a permit is received, the COE district engineer shall immediately assign it a number for identification, acknowledge receipt thereof and advise the applicant of the number assigned to it. He shall review the application for completeness, and if the application is incomplete, request from the applicant within 15 days of receipt of the application any additional information necessary for further processing. Within 15 days of receipt of application the district engineer will either determine that the application is complete and issue a public notice as described in 33 CFR Part 325.3, unless specifically exempted by other provisions of this regulation or that it is incomplete and notify the applicant of the information necessary for a complete application. The district engineer will issue a supplemental, revised, or corrected public notice if, in his judgement, there is a change in the application data that would affect the public's review of the proposal.

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APPENDIX A

FILE 66TT12P

RECEIVED

DEPARTMENT OF THE ARMY
COPRS OF ENGINEERS, OMAHA DISTRICT
TRI-LAKES PROJECT OFFICE, 9307 STATE HWY 121
LITTLETON, COLORADO 80123-6901

REPLY TO THE ATTENTION OF 8 Mar 90

REGULATORY OFFICE

Mr. Michael Waltermire
Advanced Sciences, Inc.
405 Urban Street, Suite 401
Lakewood, Colorado 80228

Dear Mr. Waltermire

Reference is made to the Draft-Wetlands Location map, January 1990, Rocky Flats site sent by you to my office. See attacned maps.

This letter is to inform you that the streams, lakes, and wetlands as mapped and indicated are considered to be waters of the United States under the Corps of Engineers jurisdiction pursuant to Section 404 of the Clean Water Act.

If an activity requres the placement of dredged fill or fill material into any waters of the United States, please contact this office for proper Department of the Army permits.

If there are any questions concerning this matter, please feel free to contact this office or me at 303-979-4120.

Sincerely,

Terry McKee

Terry McKee
Enviromental Resource Specialist

Encl.

cc:
Permit Files
Omaha Permit Branch

WETLANDS LOCATION MAP

Rocky Flats Site

January 1990

Wetlands

Linear Wetlands

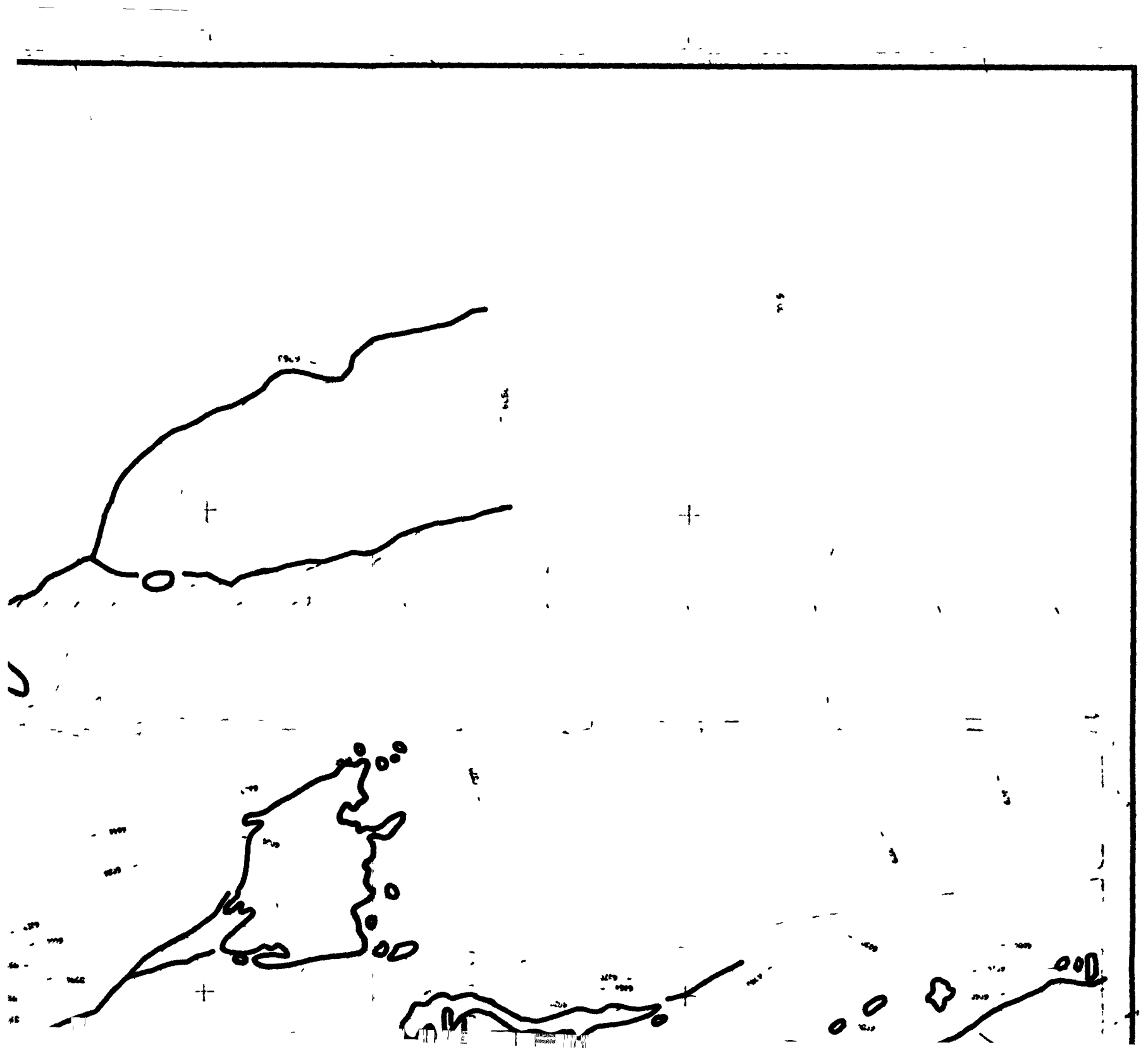
PEMC-- U.S. Fish & Wildlife Service Habitat Types

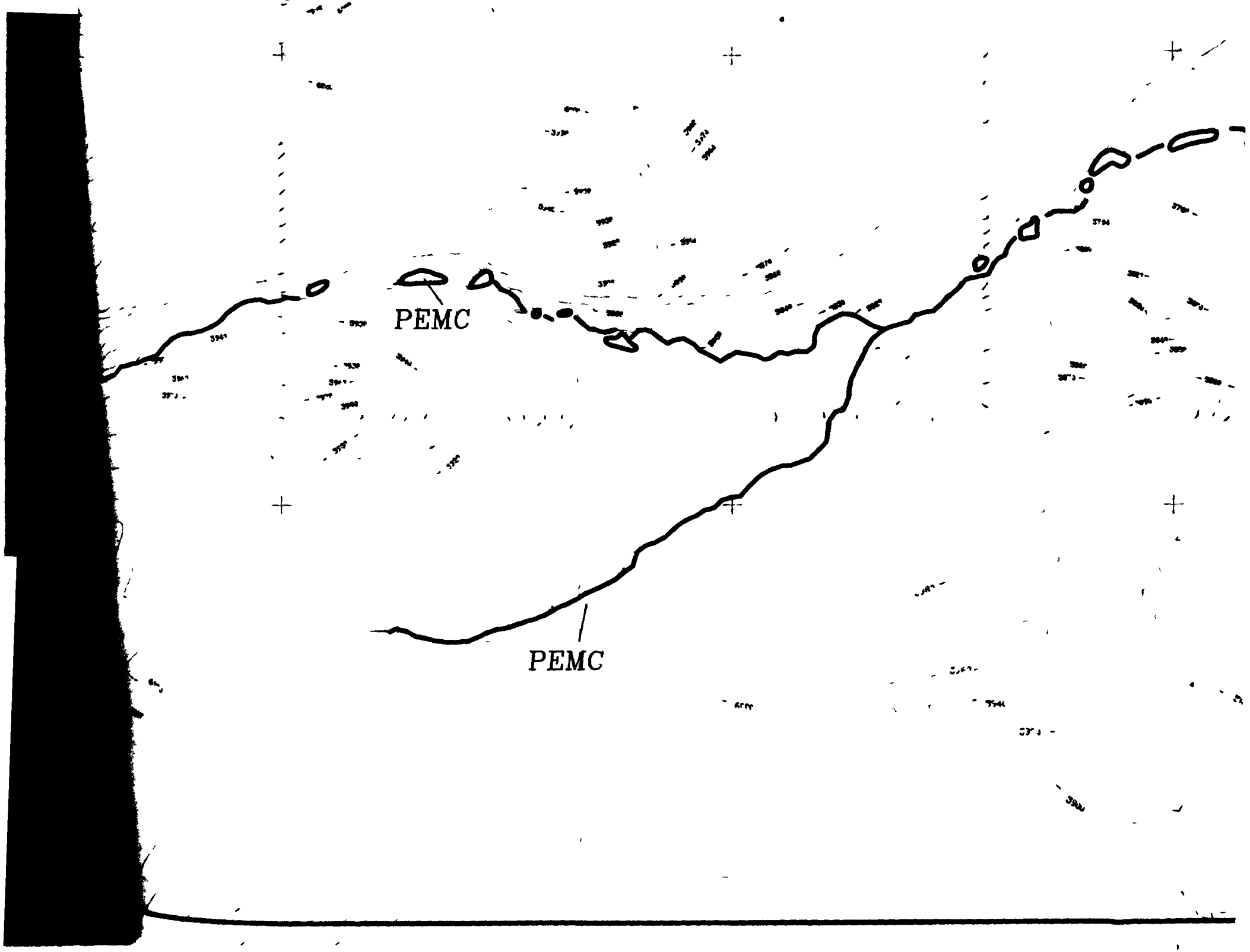
Ponds

Advanced Sciences, Inc.
Suite #401
405 Urban Street
Lakewood, CO 80228
(303) 980-0038

AutoCAD Dave Runyon

0' 500' 1000' 1500' 2000'

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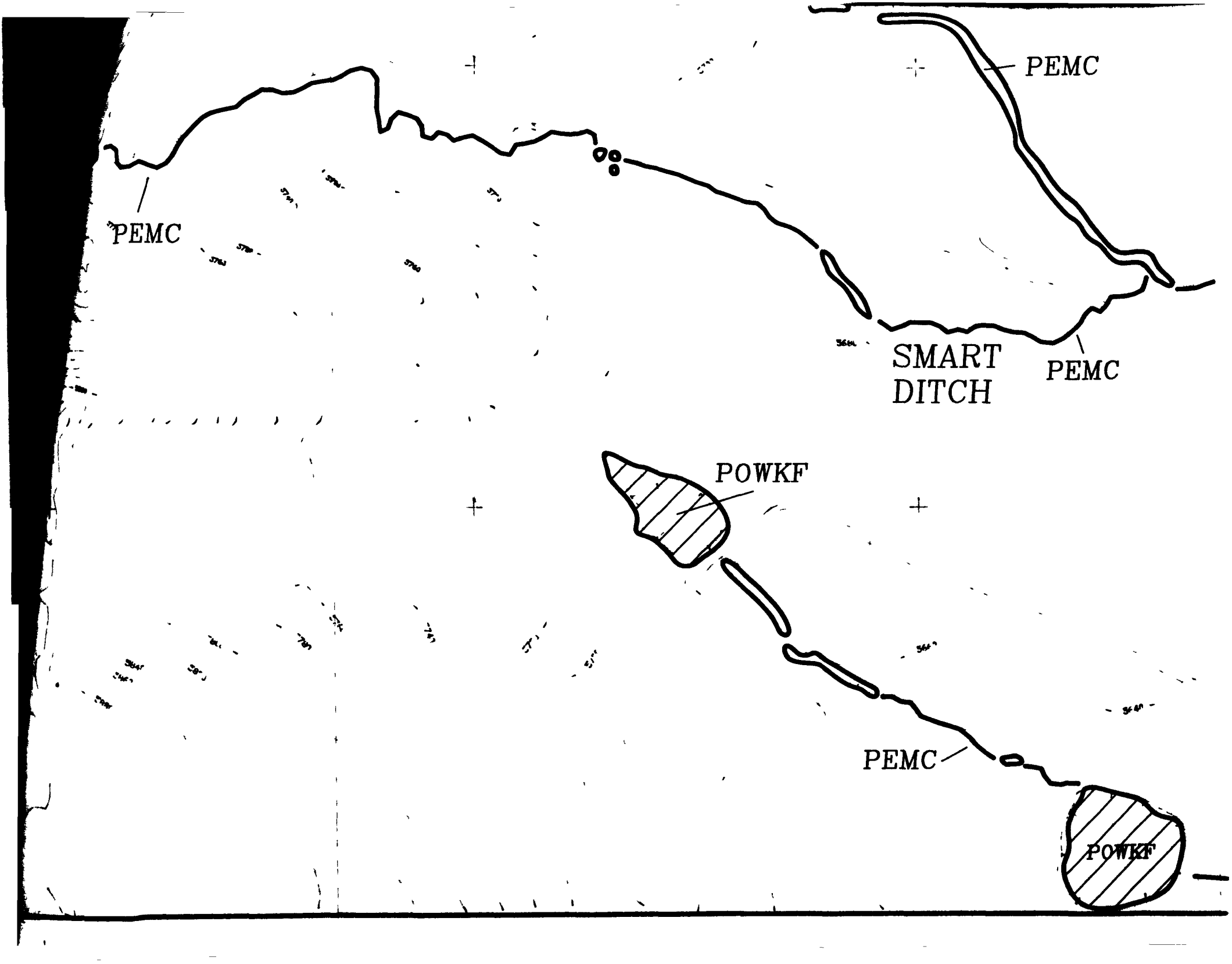
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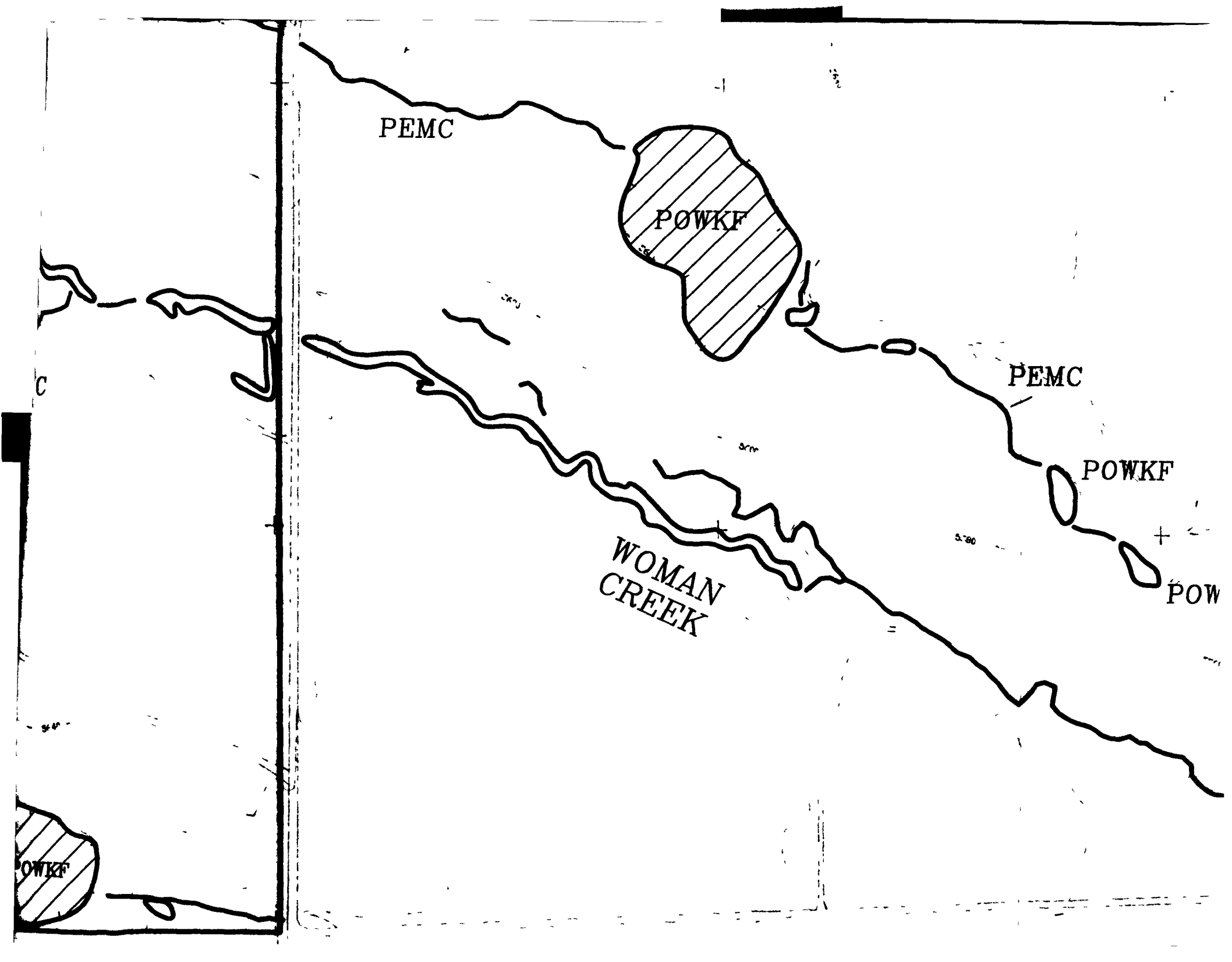
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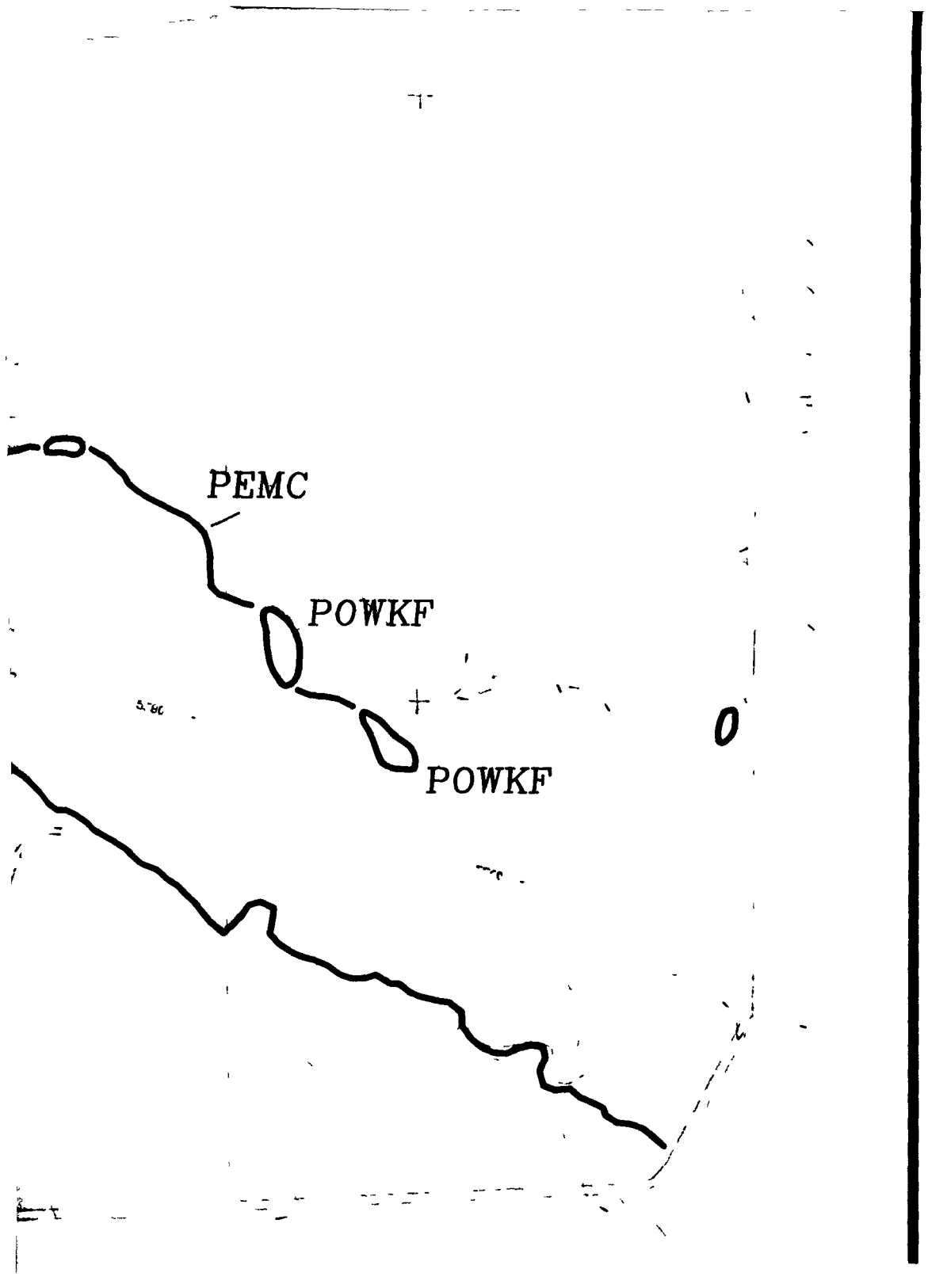

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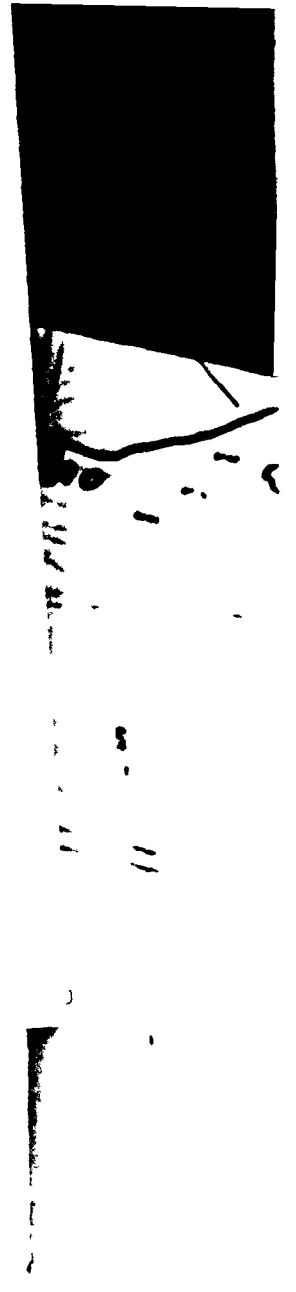

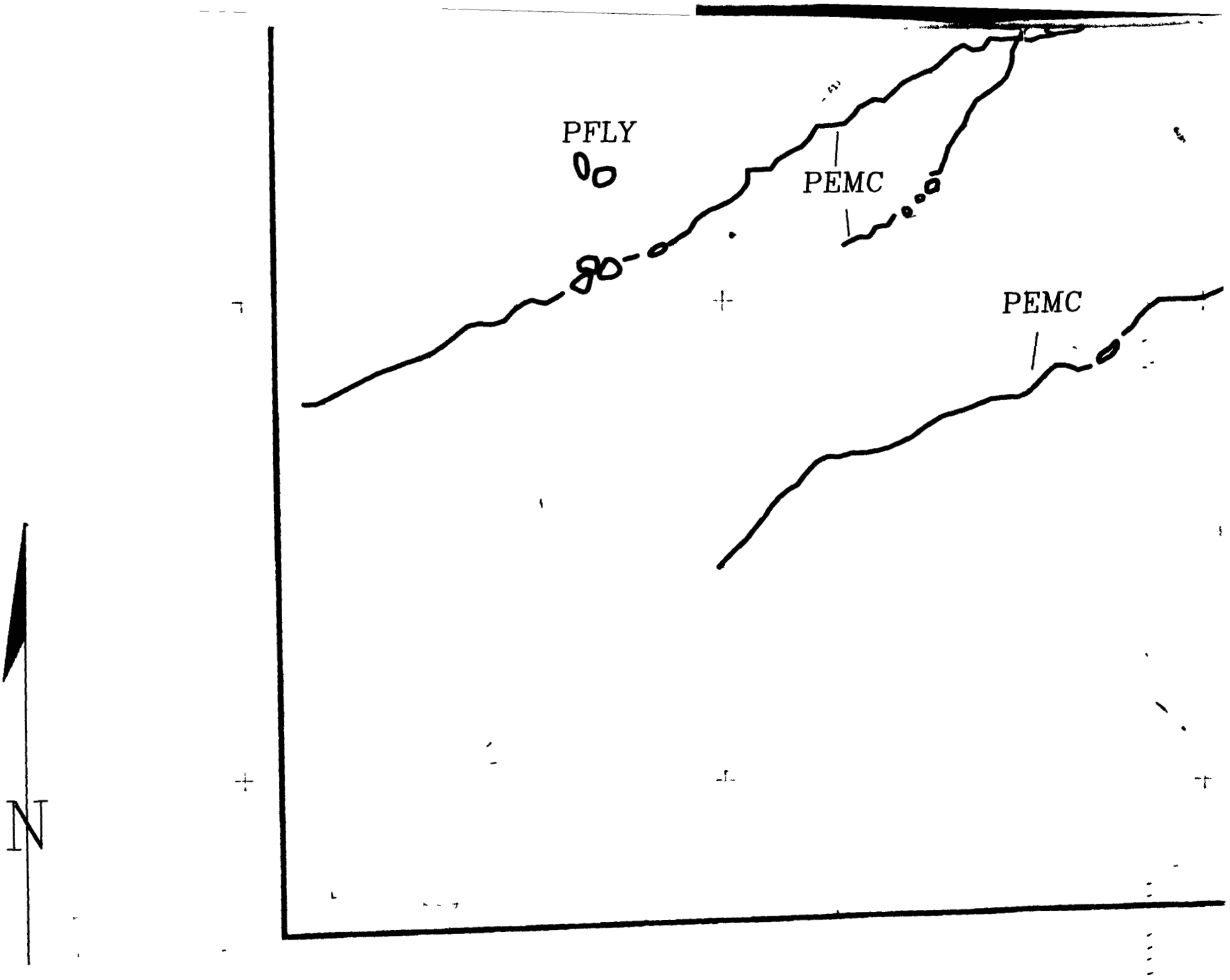
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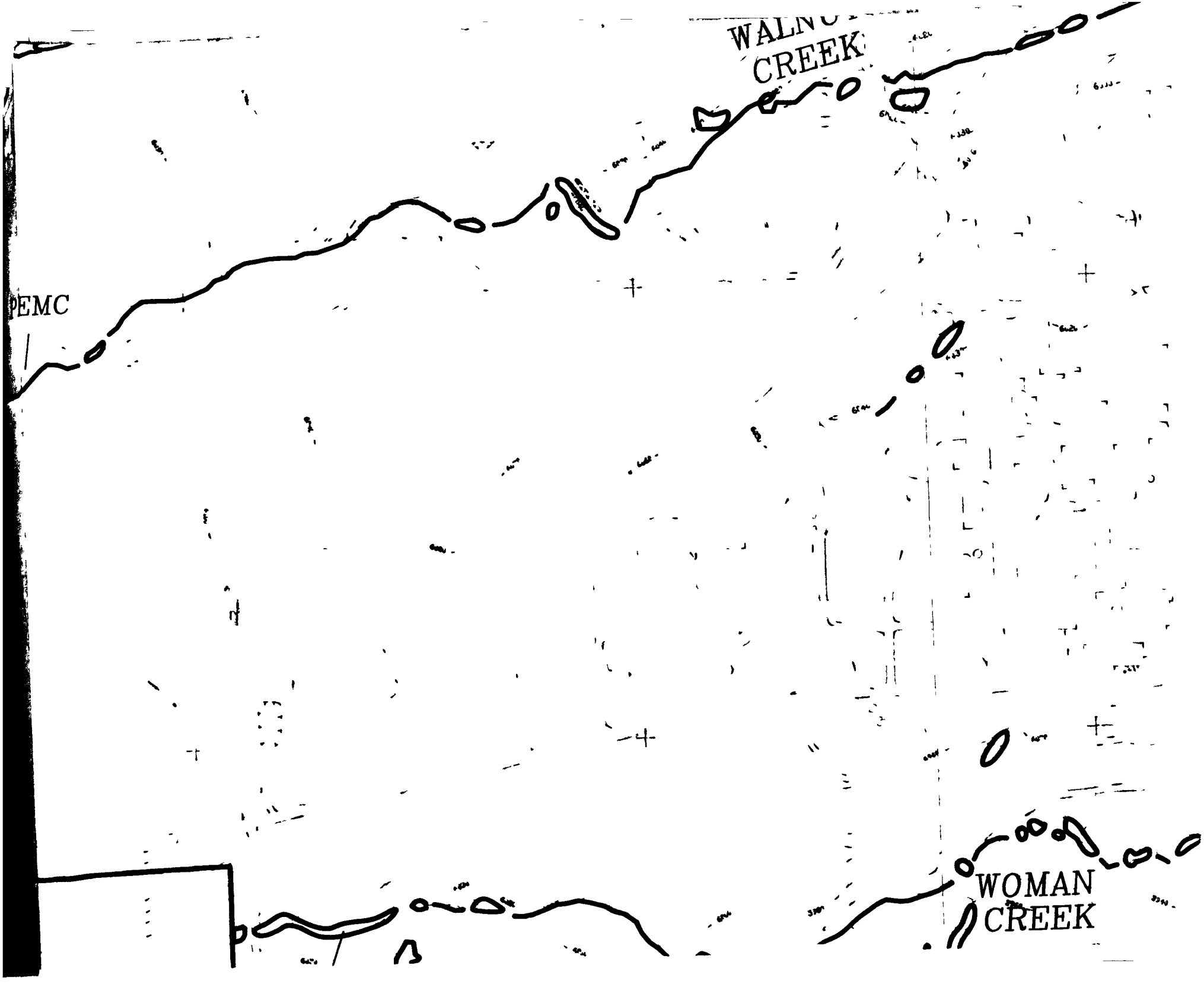
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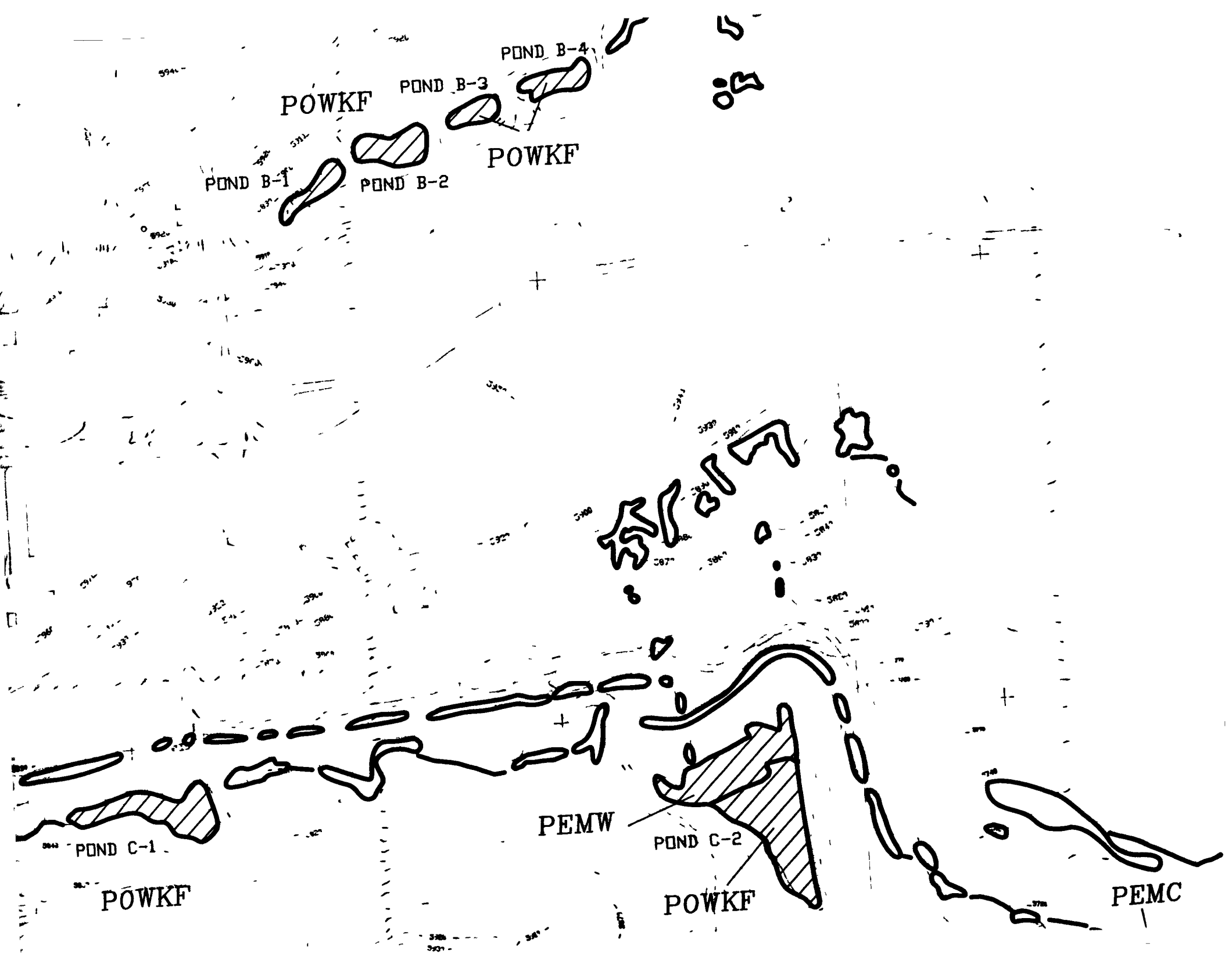
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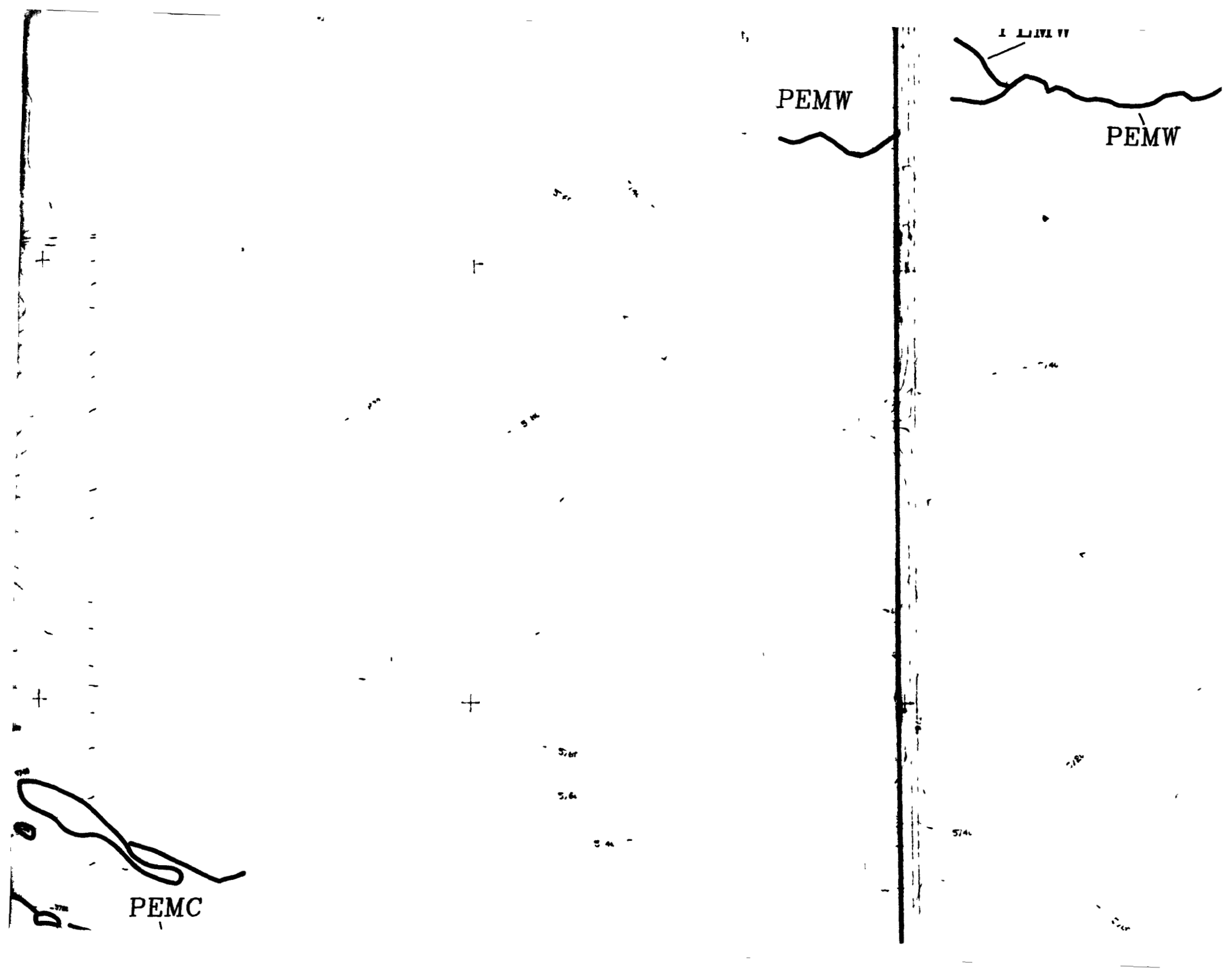
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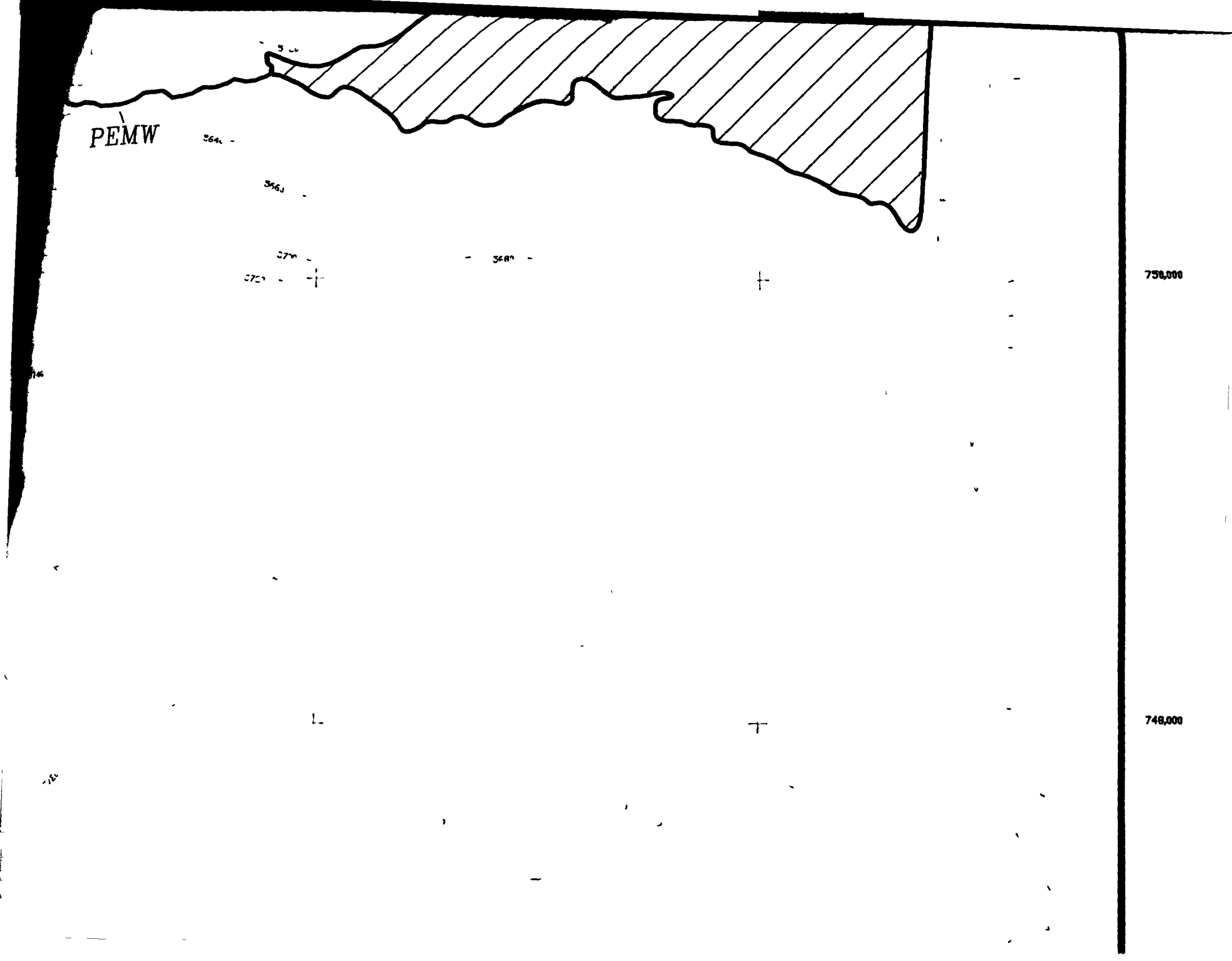
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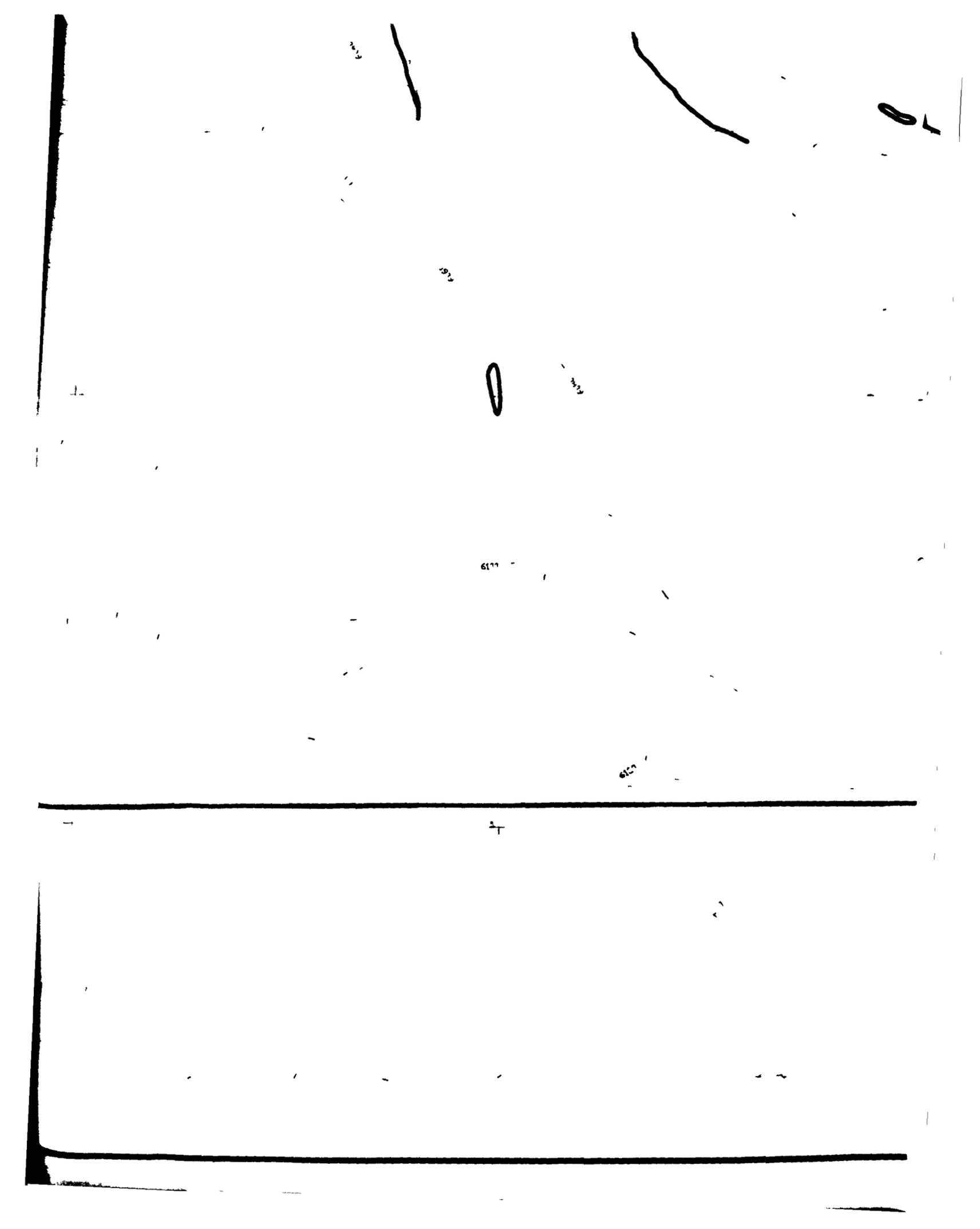

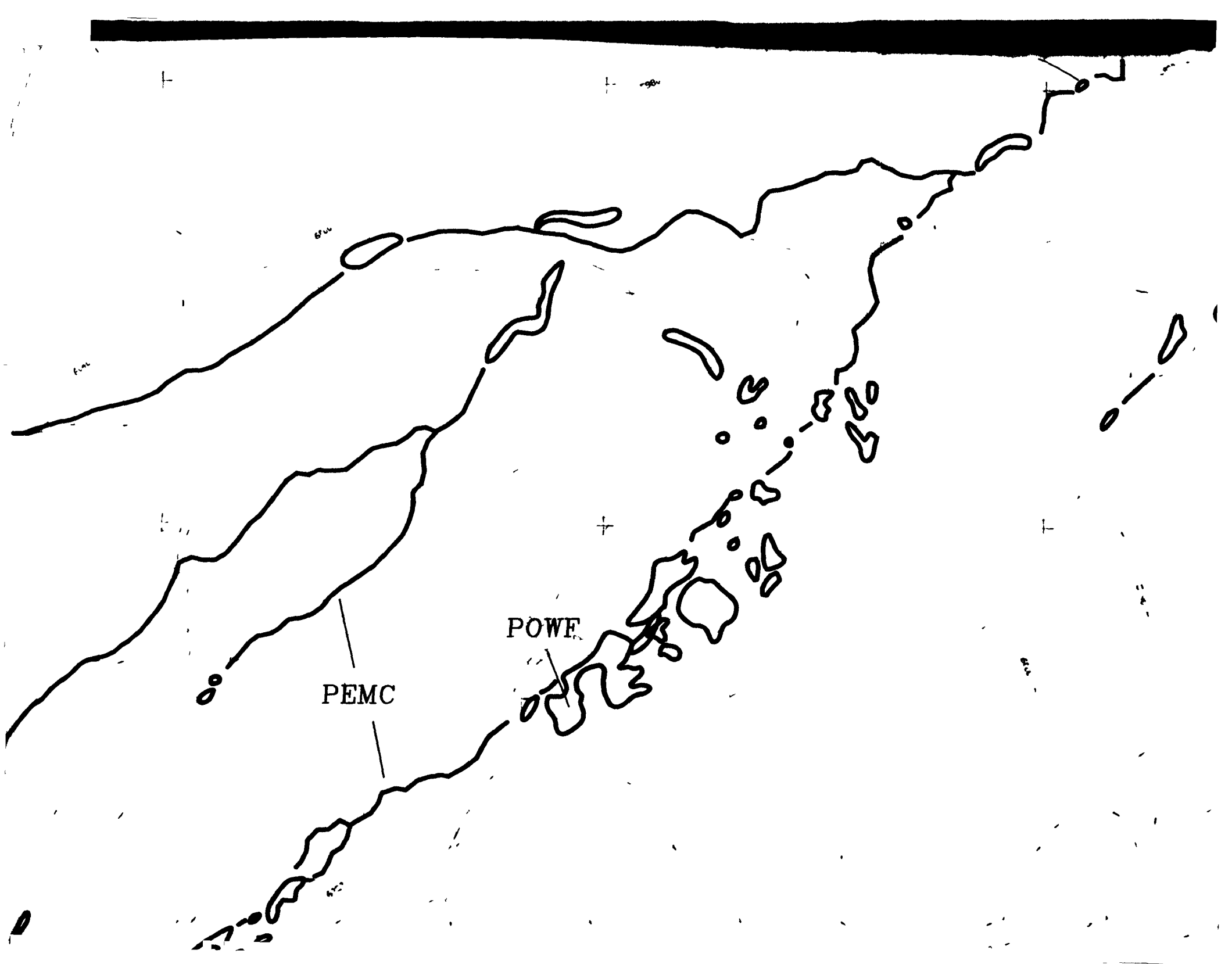
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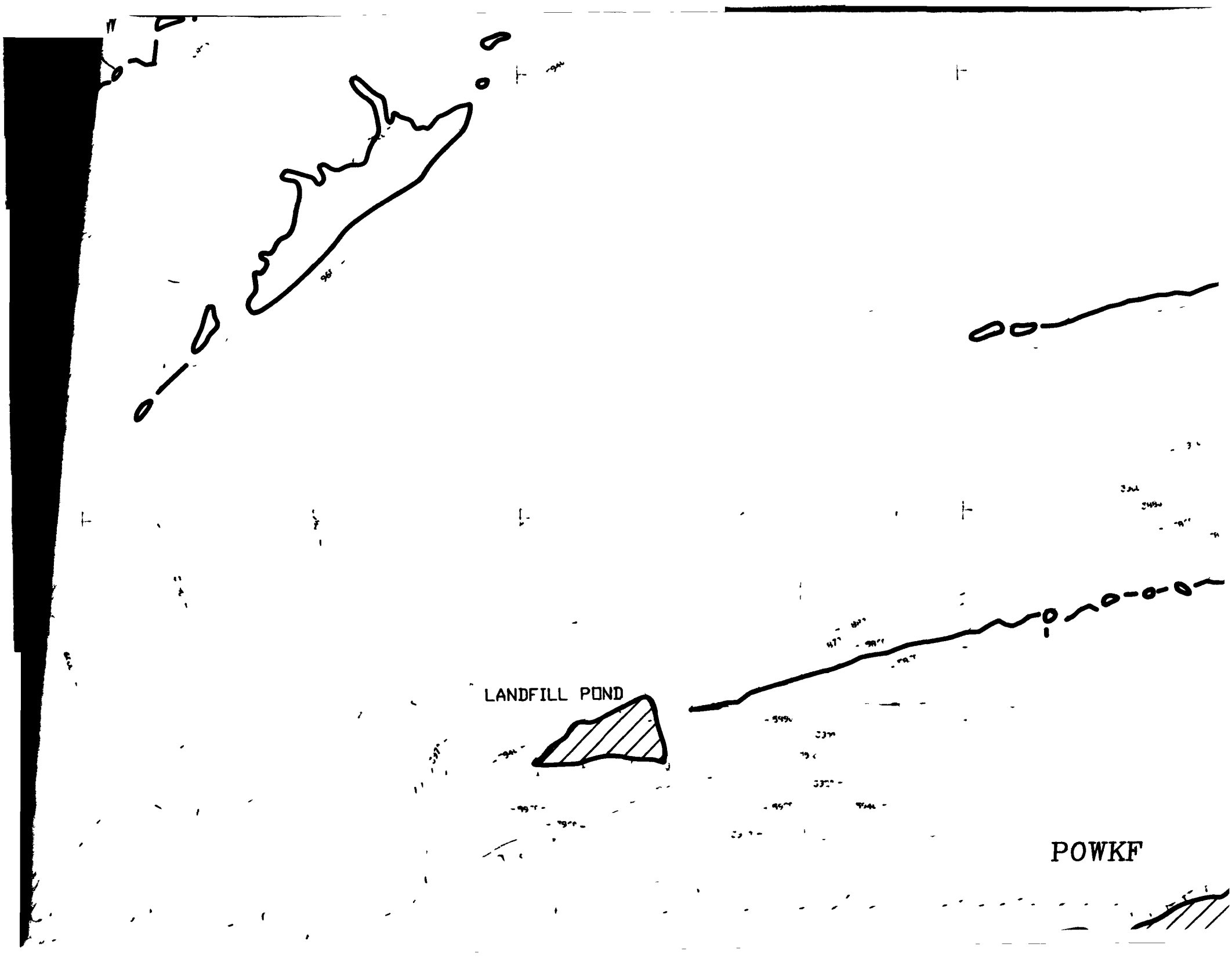
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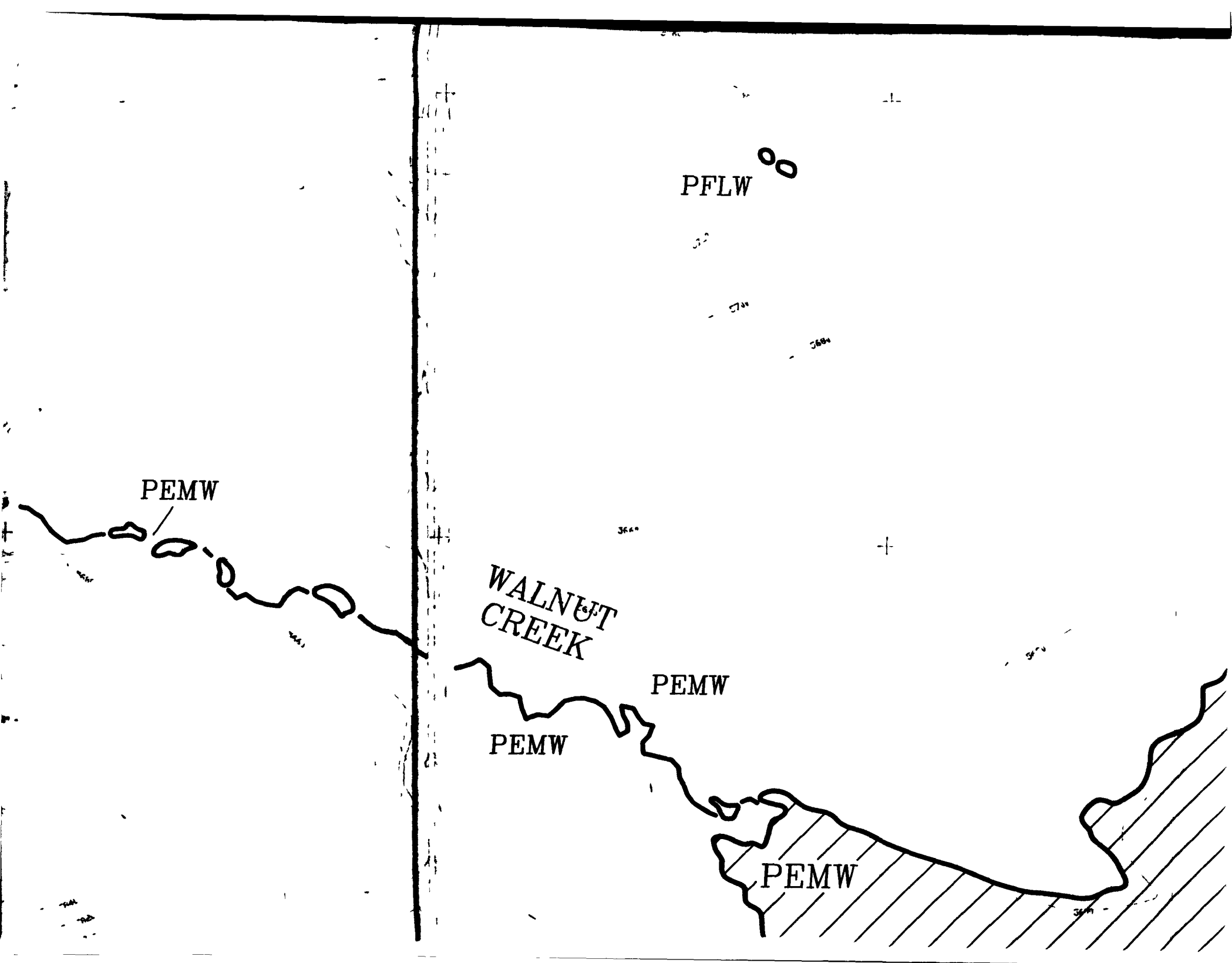
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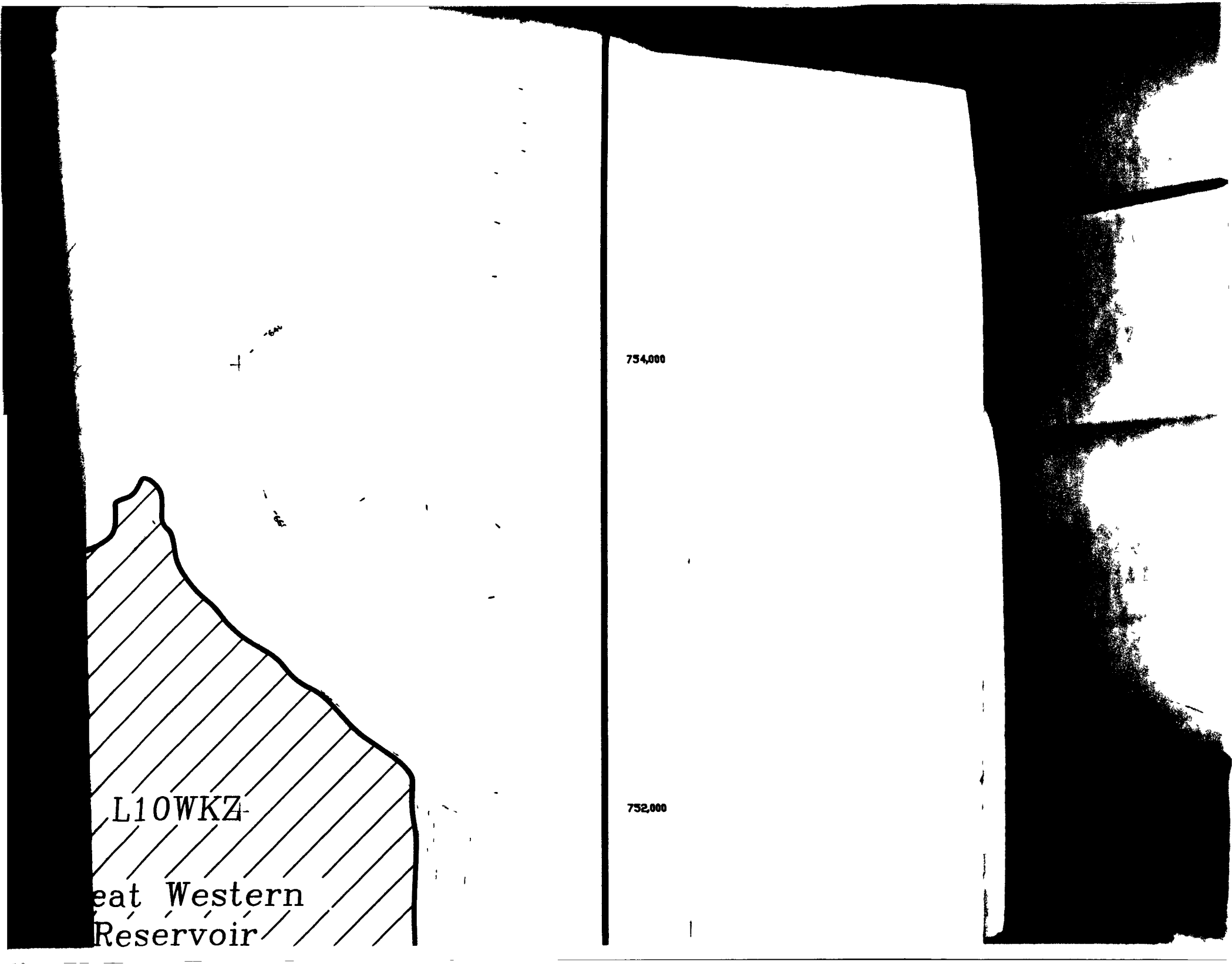
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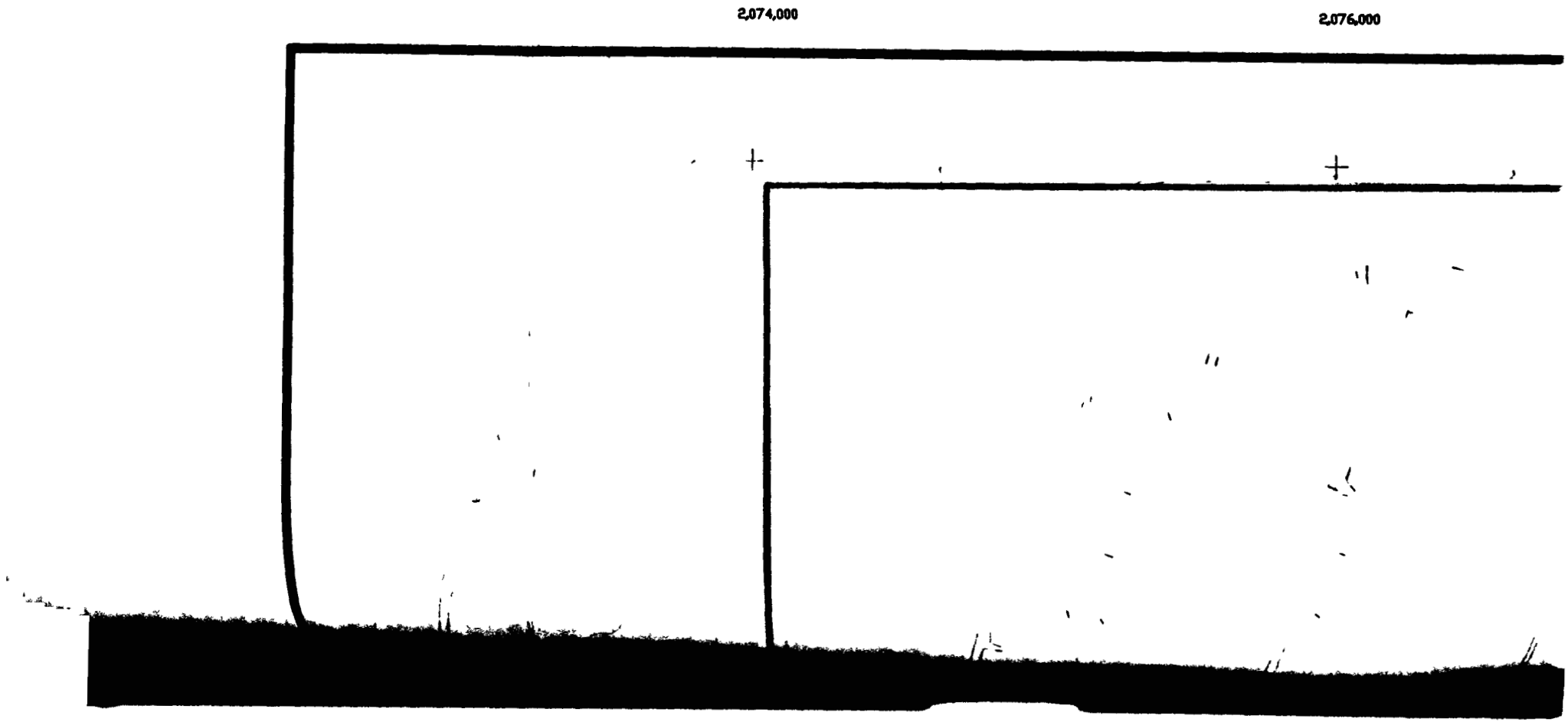
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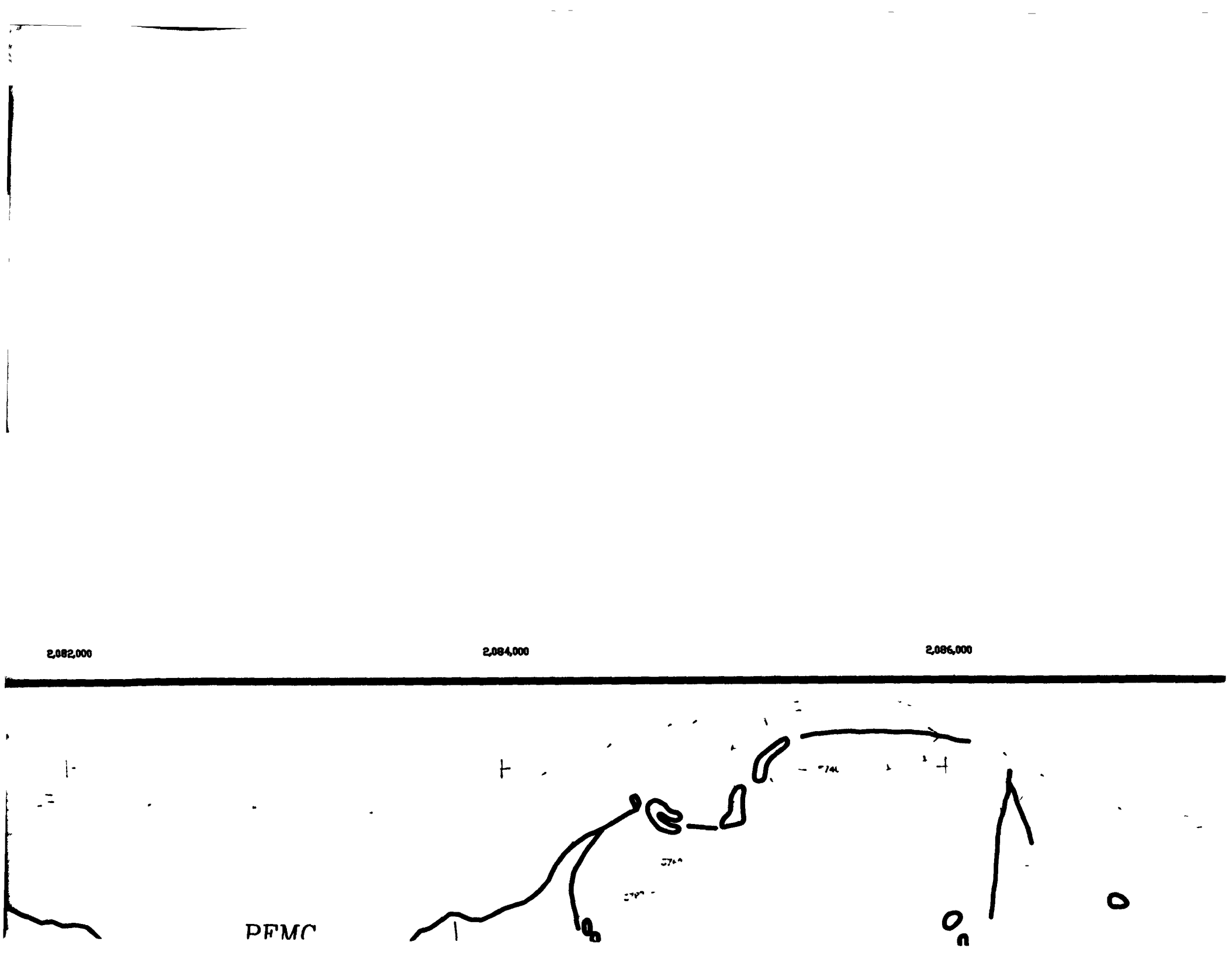
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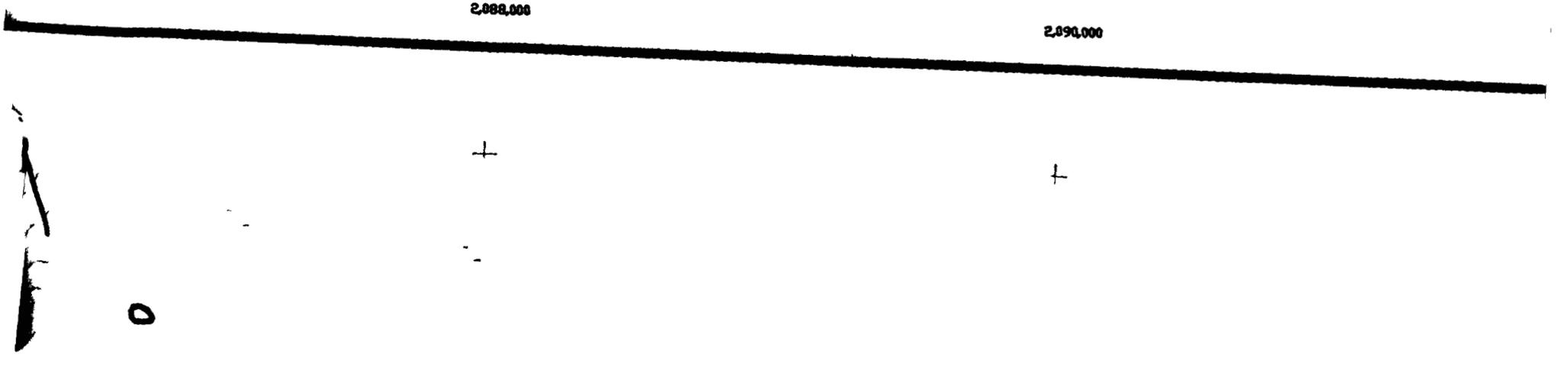
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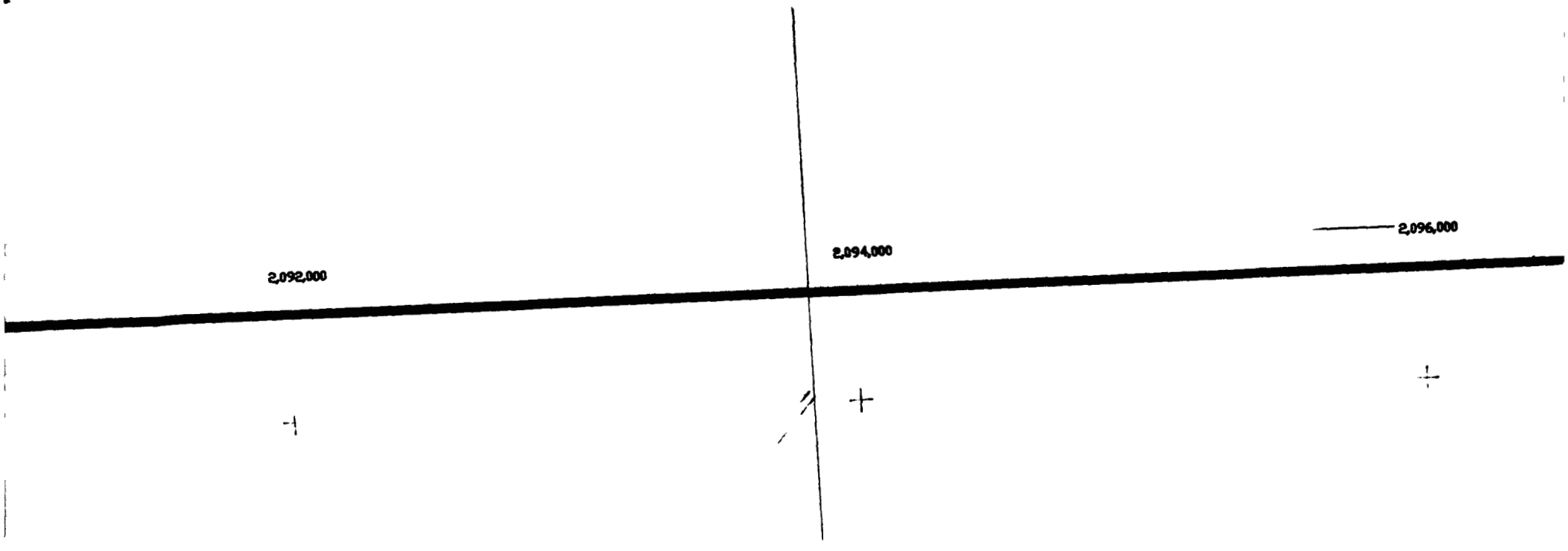
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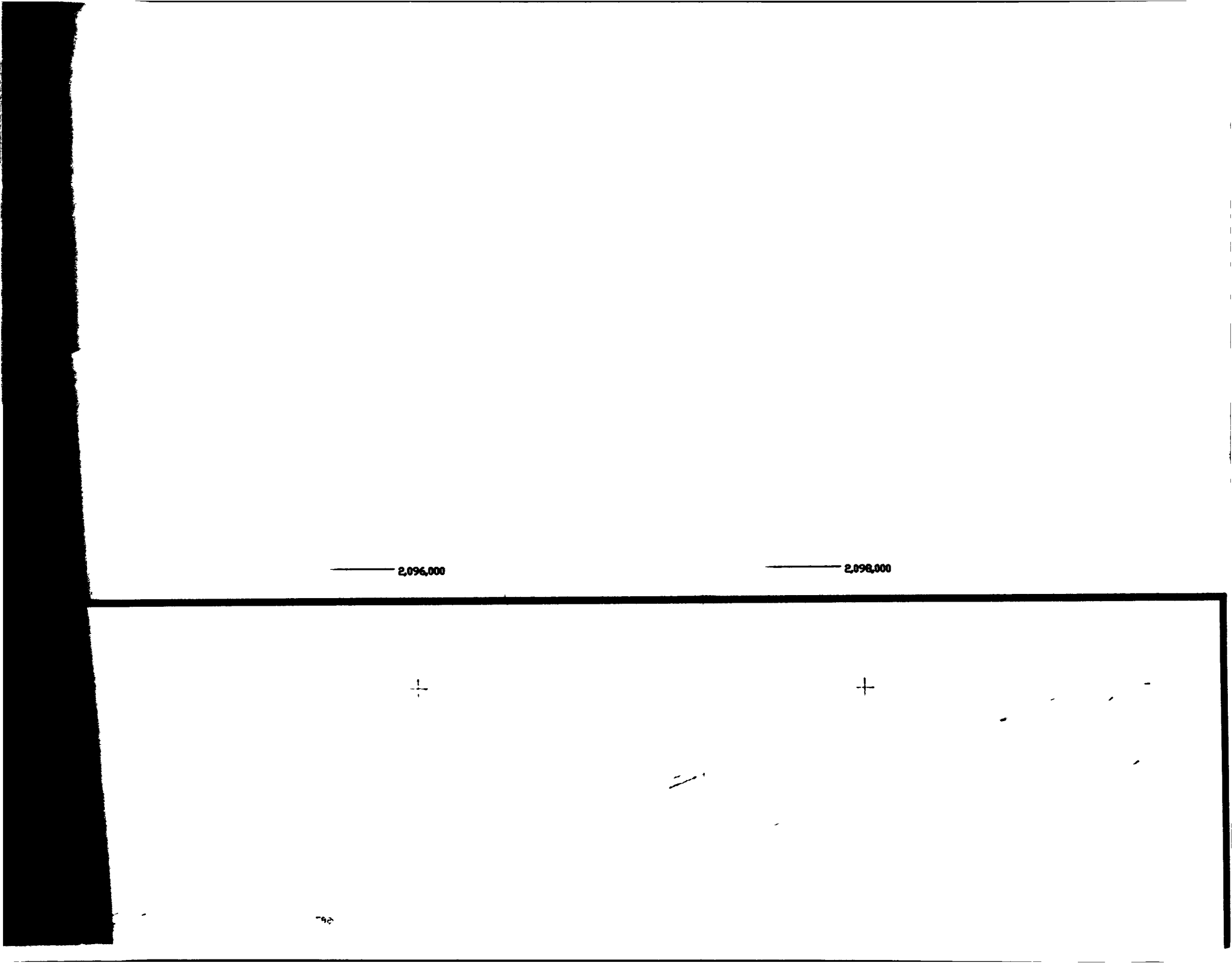
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